TECHNOLOGY DEPT.

Gas Journal

Vol. 264. 102nd Year. LONDON, NOVEMBER 29, 1950. No. 4565. Price 1/-
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by

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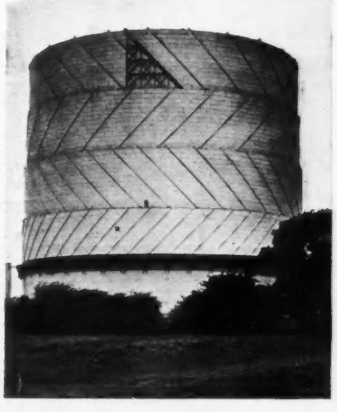
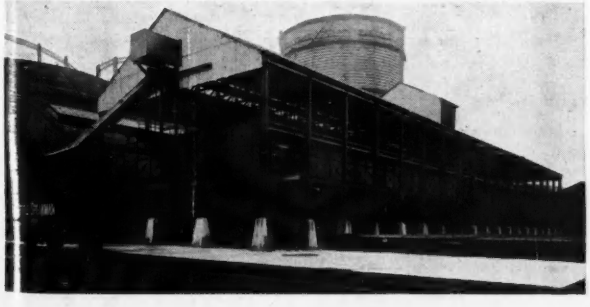


PURIFIERS



Estd. 1885

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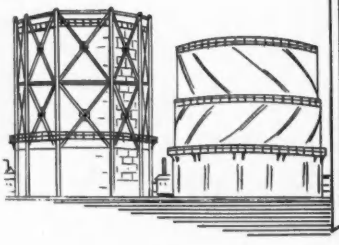

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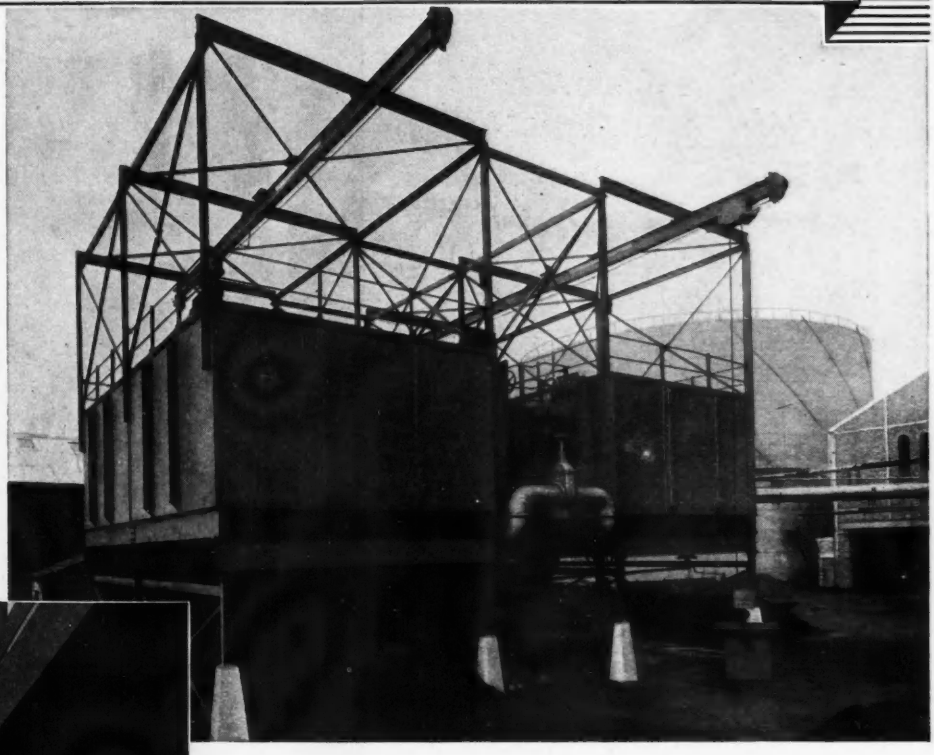

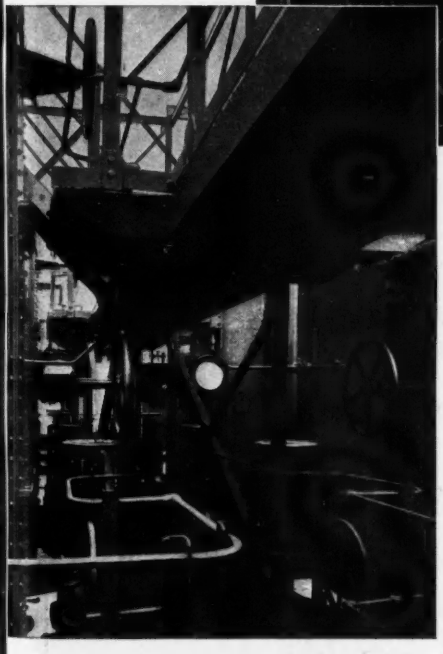

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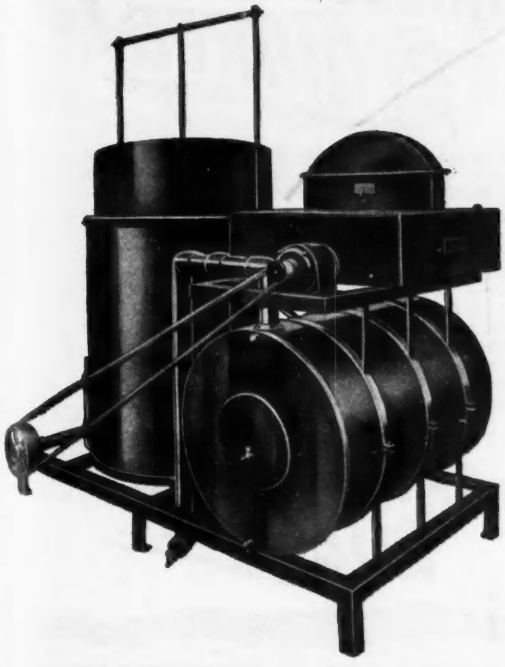

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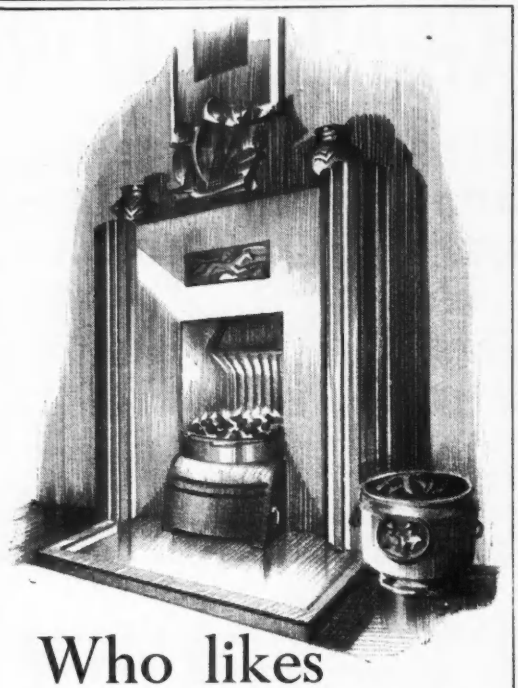

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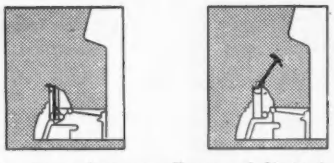
This improved service to the user increases the popular appeal of the Industry's combined fuels — gas for igniting, coke for heating.



By raising a plate, normally concealed behind the fire front, the capacity of the grate is increased sufficiently to maintain a slow-burning fire throughout the night.

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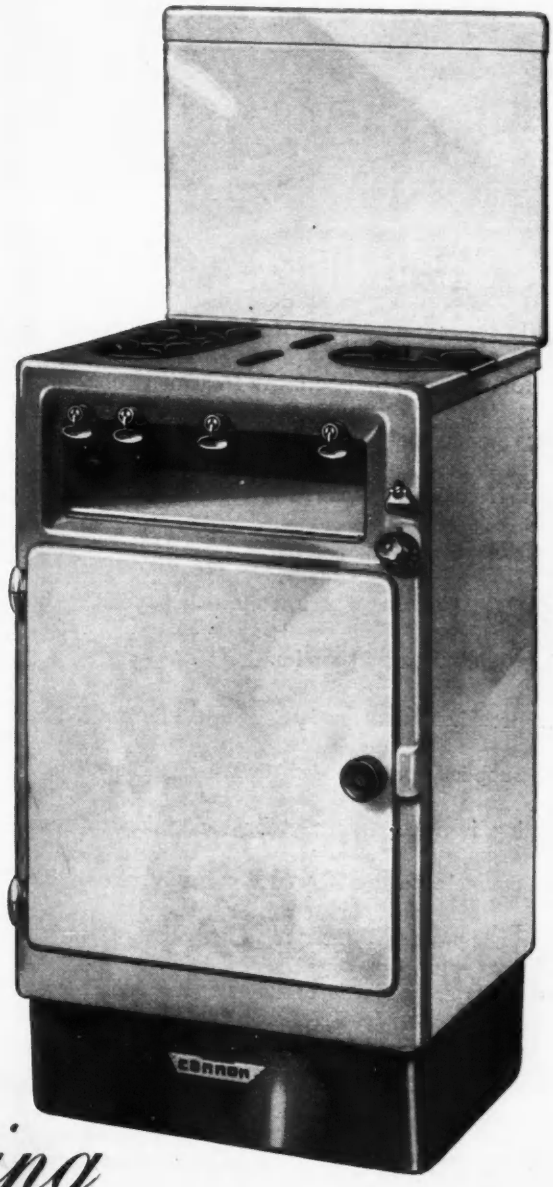

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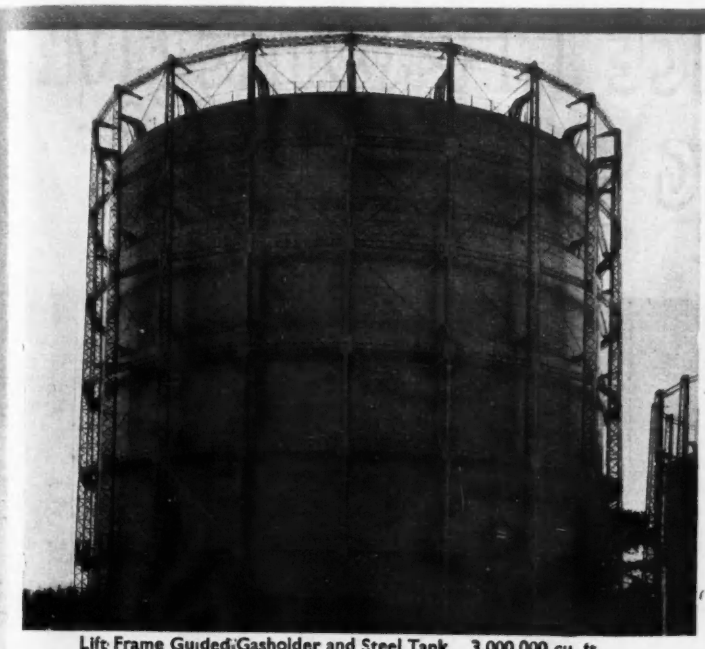

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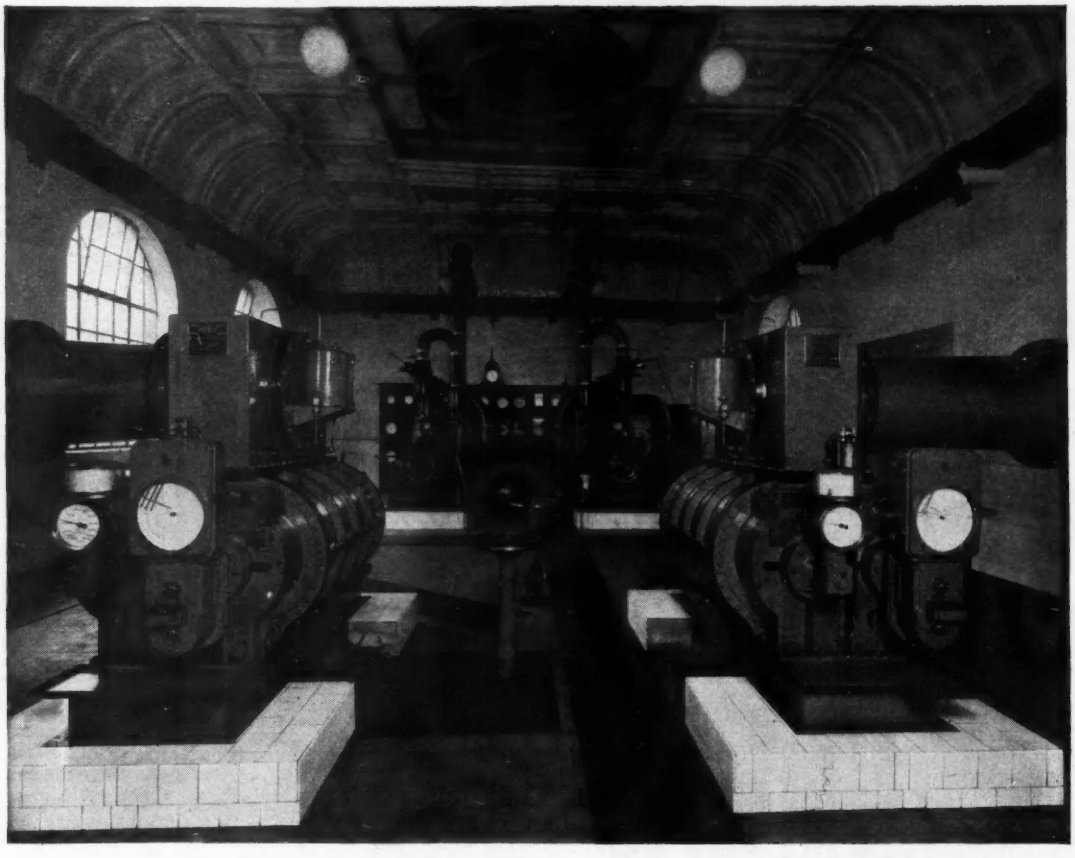

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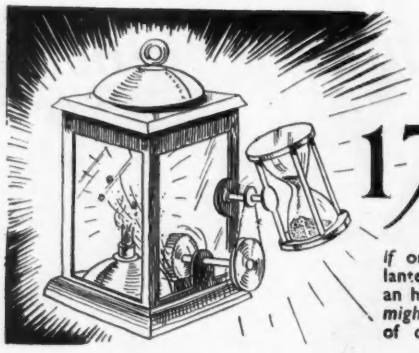

1769

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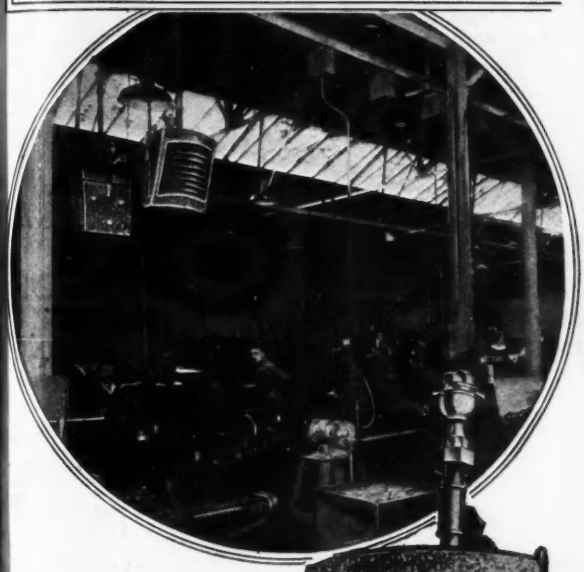

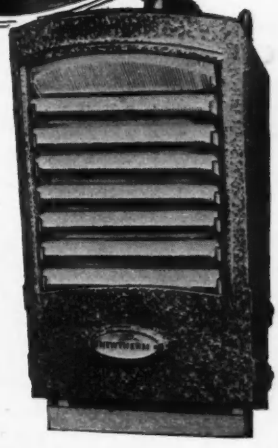

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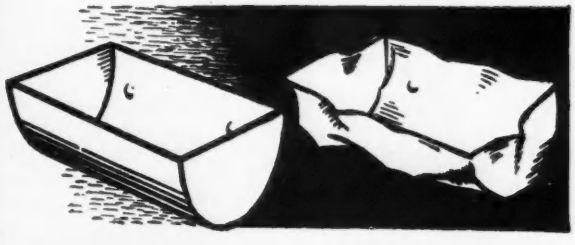

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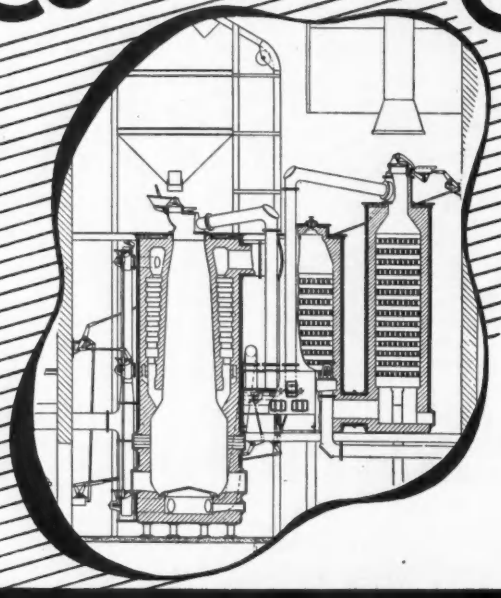

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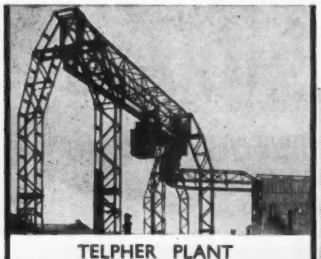

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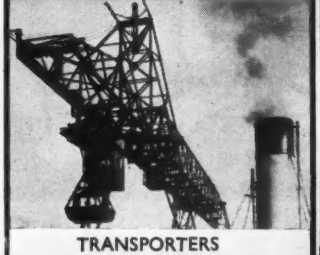

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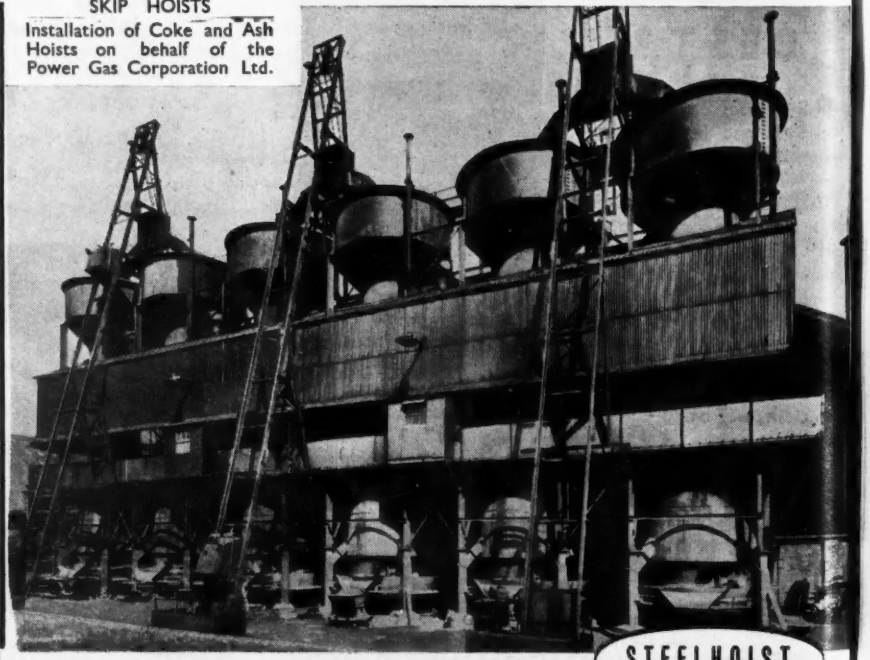

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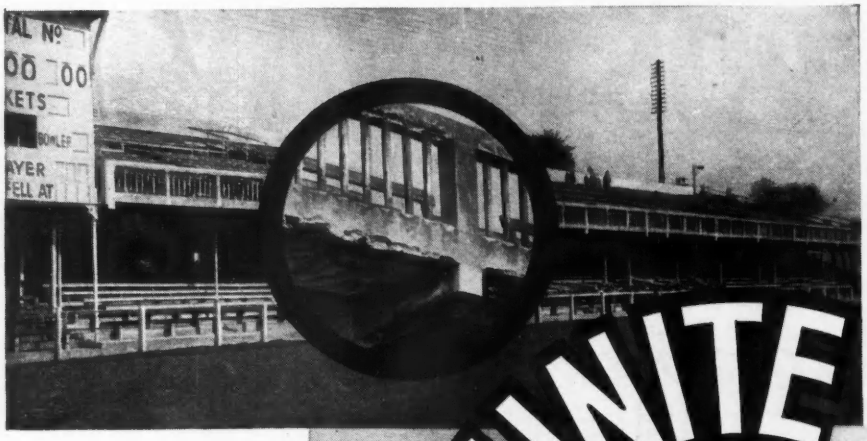

GUNITE REPAIRS to the Grandstand at 'Trent Bridge.' Before and after treatment.

Estimates given for encasing structural steelwork and covering the wearing surface of chutes and bunkers.

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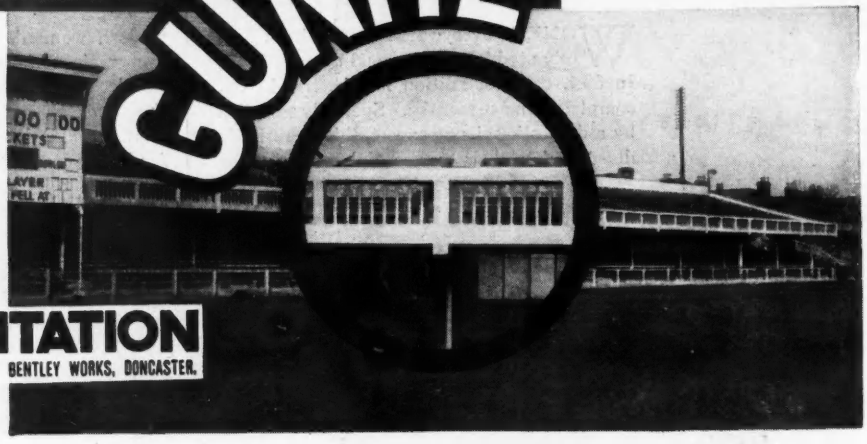

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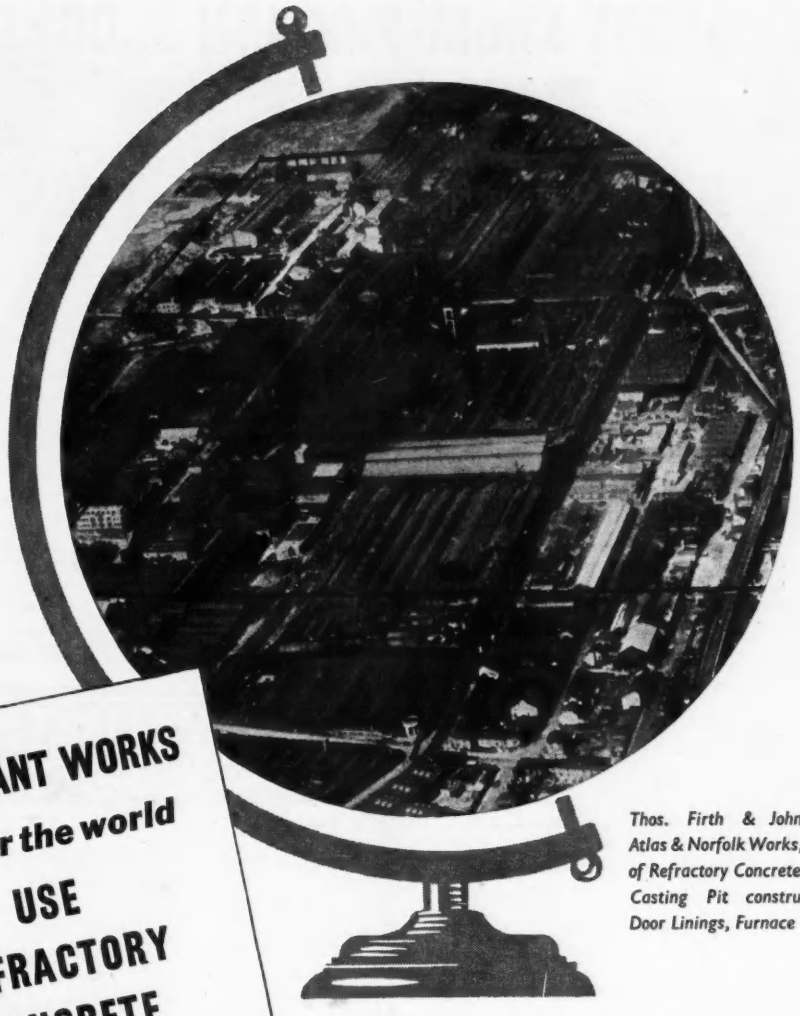

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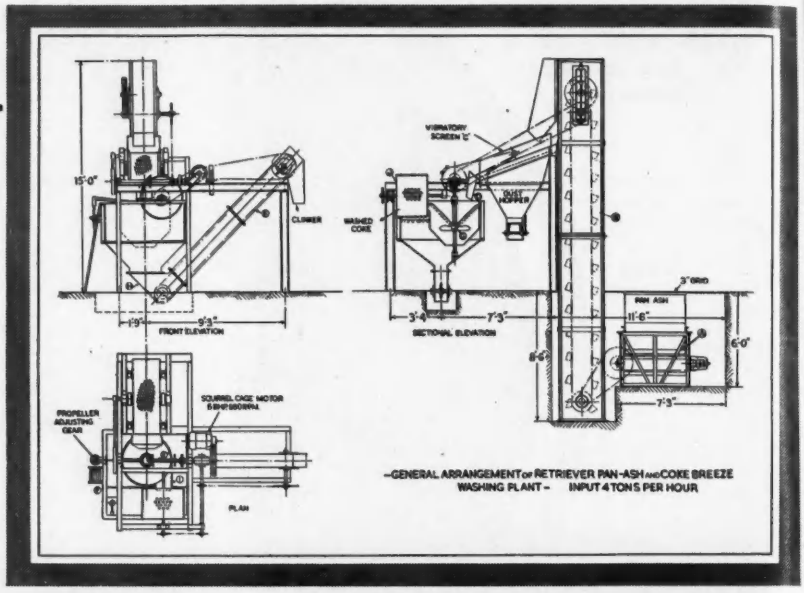

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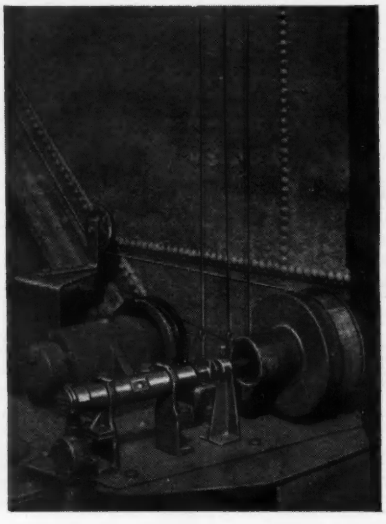

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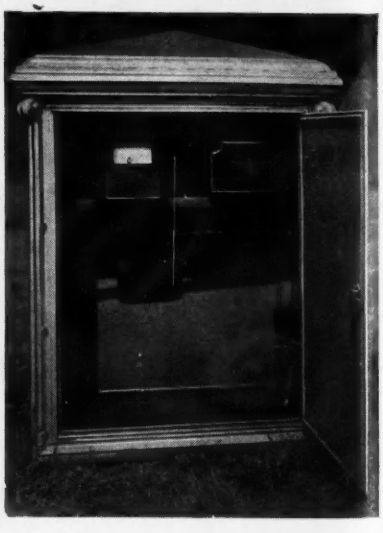

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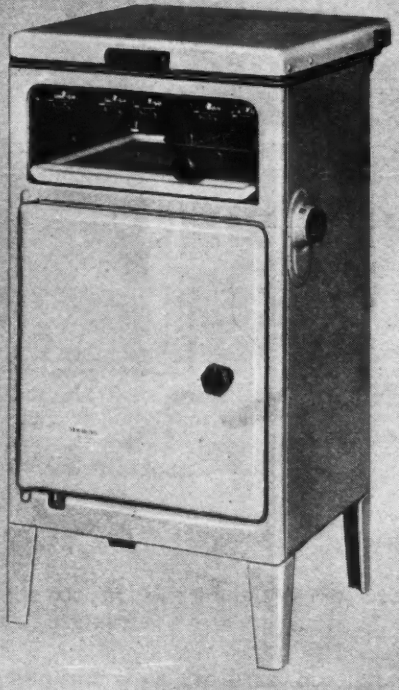

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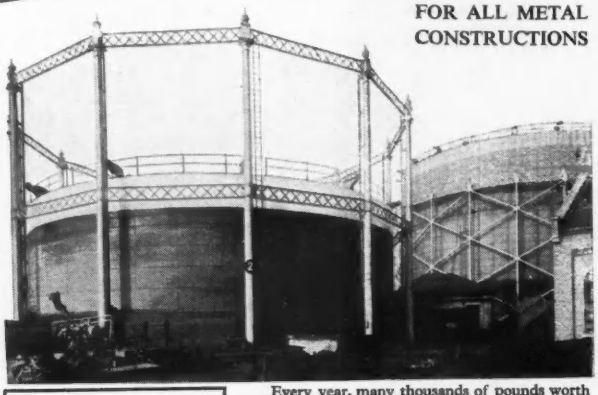

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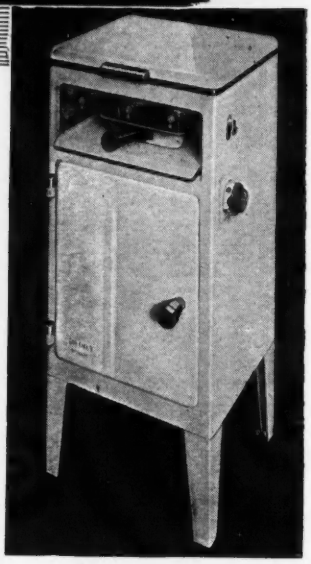

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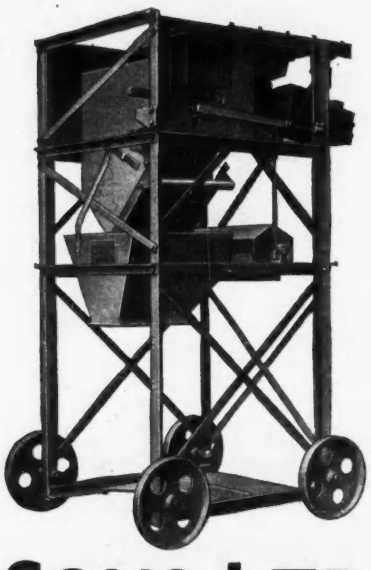

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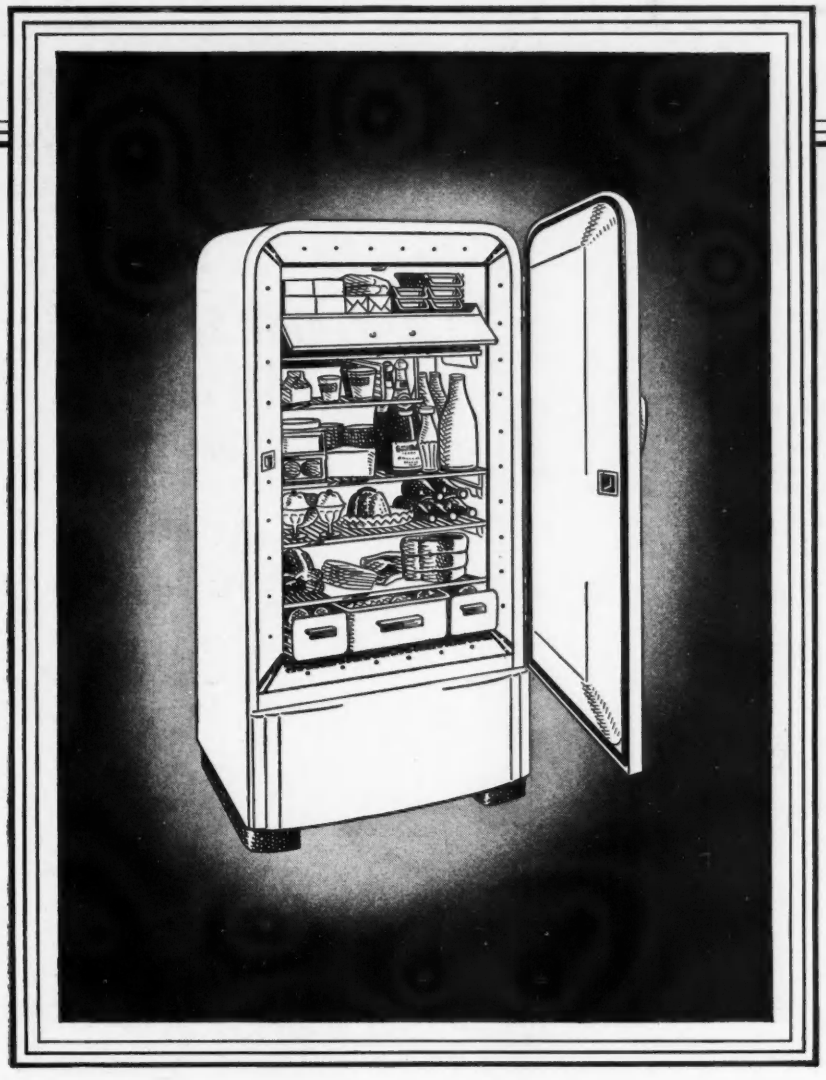

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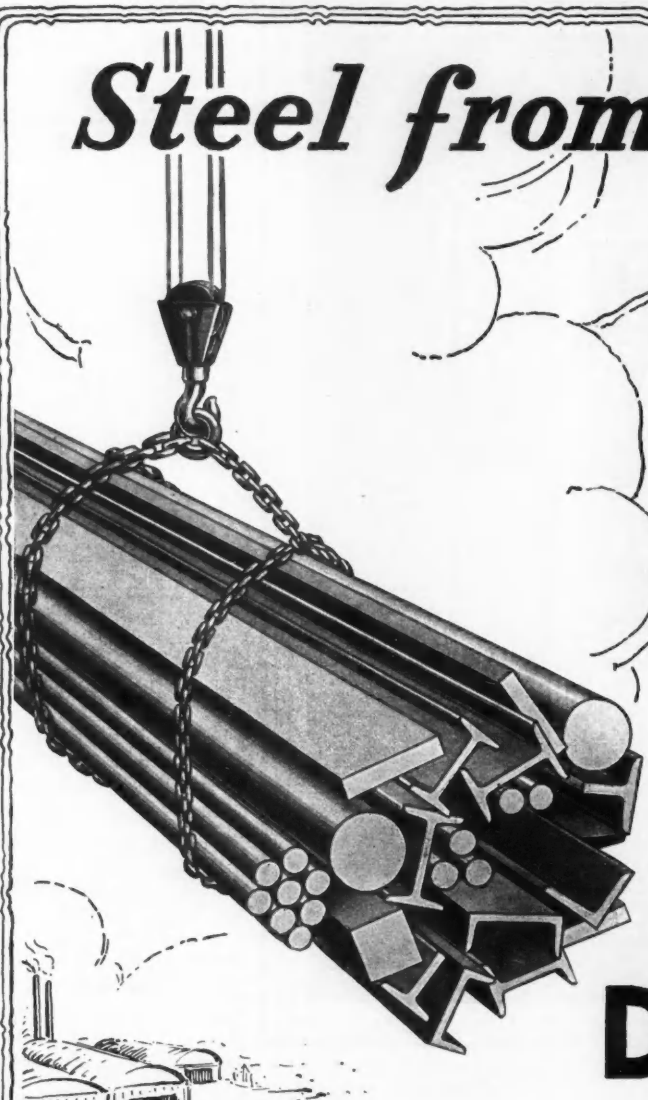

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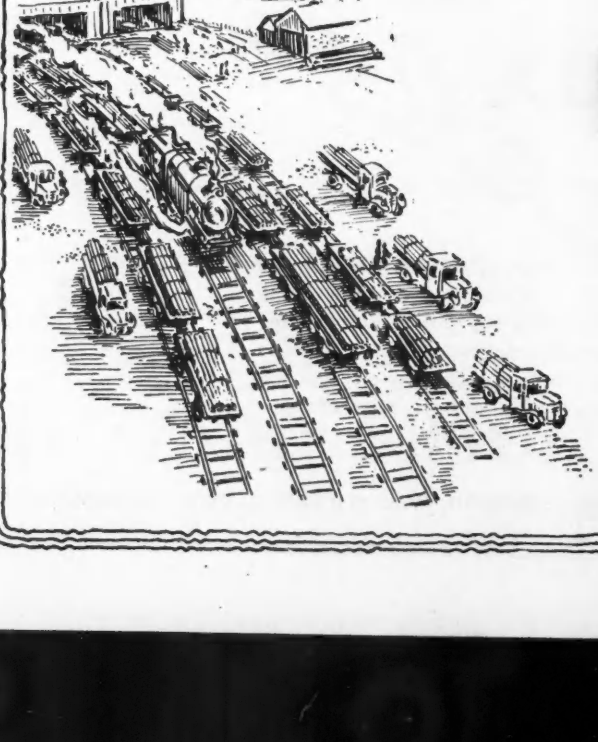

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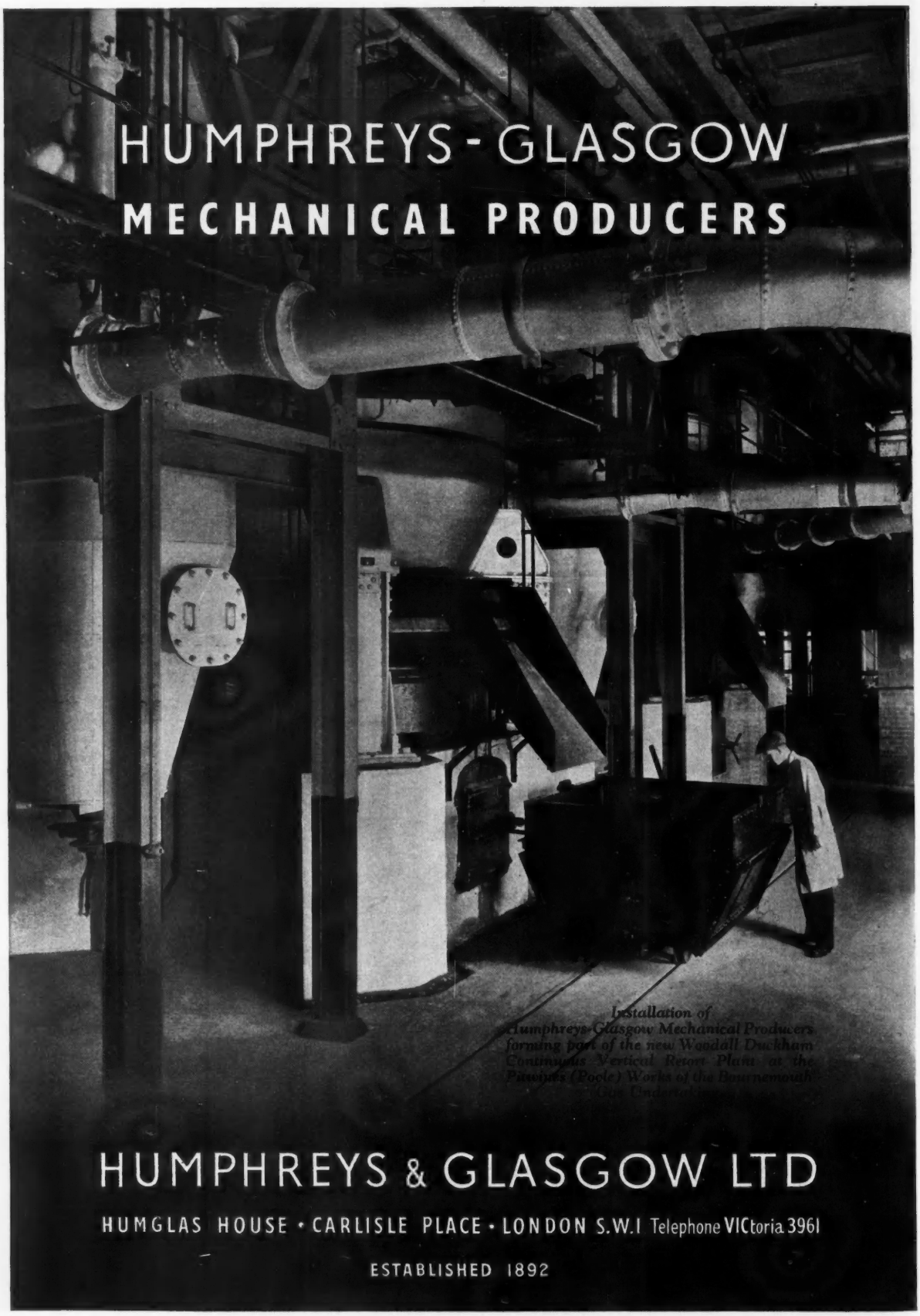
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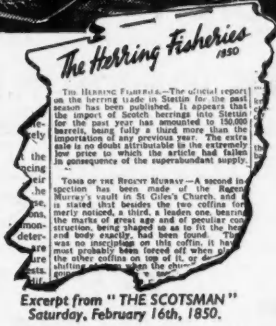
The Herring Fisheries 1850

THE HERRING FISHERIES.—The official report on the herring trade in Stettin for the past season has been published. It appears that the import of Scotch herrings into Stettin for the past year has amounted to 150,000 barrels, being fully a third more than the importation of any previous year. The extra sale is no doubt attributable to the extremely low price to which the article had fallen in consequence of the superabundant supply.

TOMB OF THE REGENT MURRAY.—A second inspection has been made of the Regent Murray's vault in St Giles's Church, and it is stated that besides the two coffins formerly noticed, a third, a leaden one, bearing the marks of great age and of peculiar construction, being shaped so as to fit the head and body exactly, had been found. There was no inscription on this coffin. It had most probably been forced off when placing the other coffins on top of it, or during the shifting of them when the church was

Excerpt from "THE SCOTSMAN" Saturday, February 16th, 1850.

IN the case of perishable commodities such as herring, the law of supply and demand can often play havoc with price.

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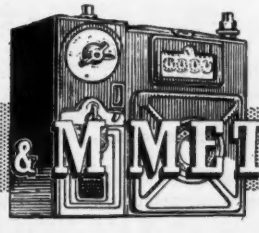

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Gas Journal

102nd YEAR OF PUBLICATION

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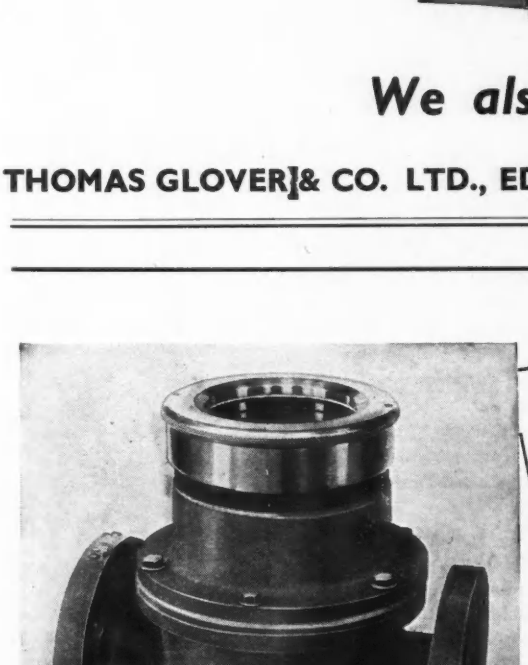

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GAS JOURNAL

VOL. 264. No. 4565 102ND YEAR NOVEMBER 29, 1950

ELECTRICITY CUTS AND FUEL POLICY

THE picture presented by Mr. C. T. S. Arnett in his presidential address (reported on another page) to the North West Fuel Luncheon Club not only shows the difficulties with which the electricity industry is confronted in its efforts to meet the demands upon it, but, by implication, it shows the utter want of anything like a national fuel policy in this country. The Electricity Authority is asking for Government sanction to increase its generating capacity annually at the rate of 1,800,000 kW. At this rate it would stand a reasonable chance of overtaking the growth of demand, at the present rate, by 1957. Such an annual increment represents an expenditure of £90 mill. The Authority has been restricted to 1,600,000 kW per annum at which rate Mr. Arnett cannot see any end to load shedding. And that is not all. As the Anglo-American Productivity Council has pointed out, American industry consumes six units per man hour compared with two in British industry. If British industry is to reach this standard—Mr. Arnett says, if it is to double its present consumption—another 650,000 kW or a total increment of 2,450,000 kW at an expenditure of £12½ mill. would be required.

These figures raise obvious questions. Government restriction of generating plant construction implies that the Treasury is not prepared to concede so much of national capital expenditure to the electricity industry. But surely the matter should not rest there. We are told that the American housewife uses electricity for refrigeration, for some of her cooking, but none for space heating. And with the very large industrial consumption there is a load factor of 60% compared with something nearer 40% in Britain. Here, the electricity industry persists in reaching out for domestic load which does nothing to increase the load factor.

But quite apart from the very doubtful means used to secure this domestic load—'free' wiring, subsidised rates, all-electric housing estates, and so on—the alarming fact is that the three industries, coal, gas, and electricity, go on, each working in a vacuum as if the others did not exist. Surely it is time that the Ministry of Fuel and Power stood up to its patent duty to co-ordinate these services, defining the proper sphere of each, or if there is to be 'freedom of choice' and fair competition, saw that the ring was kept with fair play for all. Only if each class of demand is made to stand on its own feet with all services openly and fairly charged for can these conditions be obtained.

The alarming aspect of current thought on these matters is the economic unwisdom which appears to accept as axiomatic the thesis that efficiencies and even productivity is proportional to the consumption of electricity per man hour. Even in the Economist, characterised as its columns generally are by economic wisdom at its best, we read the sentence beginning 'To raise British industry to the same standard of electrification . . . . ,' written as one can see with the implication that electrification is synonymous with economy in its widest and best sense, that sense being the best, most effective, and most efficient use of the resources of nature and science. The article goes on to the usual criticism of power stations built like cathedrals whereas the real disease is something seated very much deeper. It is a disease which will only be eradicated by a thorough-going survey of the whole of the nation's fuel resources and their application in the several forms where each can contribute to the nation's needs with the maximum of efficiency—in short, by the evolution and application of a national fuel policy. So far each of the fuel industries is speaking for itself, securing for itself the maximum of business, each without the slightest regard to the others and without the slightest regard to what may be best for the polity as a whole.

There is nothing very new in the foregoing suggestions. We have more than once called attention in our feature 'Gas in France' to councils which have been set up there, with representatives of the coal, gas, electricity, and steel industries, to secure equitable and economically sound distribution of fuel and raw materials between themselves. We are asking for nothing much more than that our own Ministry should function in a similar manner. Perhaps it is doing so already. If so we should like to see a little more tangible evidence of its activities in this direction.

OIL DEVELOPMENTS

SIX weeks ahead of schedule, the new oil refinery at Shell Haven, Essex, has come into operation; the refinery is manufacturing petrol and other oil products at a rate of 1,450,000 tons a year, and the schedule is an output capacity by 1952 of over 2 mill. tons a year. The Shell Stanlow refinery, which came on stream in November last year, is already producing at a rate of more than a million tons a year. When the two projects are completed by 1952, Shell's refinery capacity in this country will, with the addition of the 1½ mill. tons a year installation at Heysham, Lancashire, total over 6½ mill. tons a year. When the British refinery programme is completed, probably by the end of 1952, refining capacity in this country will be around 20 mill. tons annually. The whole represents a programme of magnitude and is of great international significance. High policy was behind its formulation, with, of course, Marshall Aid entering basically into its practical fulfilment. Its repercussions on the fuel industries of Great Britain remain to be felt, as felt they must be, and we envisage greater co-operation in the future between the gas industry—indeed, the carbonising industries as a whole and their ancillaries—and the petroleum industry. Already the Manchester gas undertaking is taking tail gases from the refinery of Petrochemicals, Ltd., at Partington, and indication of current thought was given yesterday by the paper to the Institution of Gas Engineers on the production of town gas by the catalytic gasification of petroleum oils.

Recently, at a meeting of the Institute of Petroleum, we heard a fascinating paper by Mr. Vernon Smith, of the Shell organisation, on 'Petroleum and European Recovery'—a paper showing how, within five years, most of the complex economic problems confronting Europe were surmounted, and describing in broad terms the part which the oil industry played in this unparalleled recovery. It is a remarkable and inspiring story. The oil refinery capacity in the United Kingdom in 1938 was 4.7 mill. tons. As we have mentioned, it is estimated that in 1952-53 it will be in the neighbourhood of 20 mill. tons —this out of a total of 62,375,000 tons for all the O.E.E.C. countries, with France at about 19 mill. tons. These are impressive figures. But Mr. Vernon Smith, in discussing Europe's need for energy, put them in perspective in the composite fuel picture. At present oil's contribution to Europe's energy consumption is about 12%. In 1952-53, when oil is expected to provide some 15% of Europe's energy, total energy consumption in all forms is expected to be about 690 mill. tons coal-equivalent, hydro-electricity contributing 13%. Europe's consumption of all forms of energy has only increased from 545 mill. tons coal—equivalent in 1938 to 605 mill. tons coal—equivalent in 1949-50 (we quote from the paper), while energy consumption in the United States of America in 1949 was about 1,100 mill. tons coal-equivalent, of which over 50% was provided by oil and natural gas. 'This,' said the author, 'gives an indication of the relative levels of economic development and standards of living in the two continents and provides a measure of the distance which Europe has still to travel along the road of modern industrial and technical progress.' We could suggest at once that countries such as France or Greece or Italy or Portugal or even Britain may have little inherent desire to emulate the progress—even technically—of the United States, though for self-preservation purposes O.E.E.C. countries have to dance to tunes modern, of course, yet sometimes discordant. And dancing more in step may well prove imperative. But our thoughts are tending to diffusion beyond the self-imposed terms of reference of this note, which aims to emphasise the need now for fuller co-operation and working understanding between two important and flexible industries, the gas industry and the oil industry. More of this anon.

A FRENCH INVENTION

THE Société des Ingénieurs Civils de France celebrated its centenary of 1947 by the publication of a series of brilliant papers, now appearing in collected form, describing progress in all the main branches of engineering since its inception. Among these papers is one entitled 'The Evolution of a French Invention: Reinforced Concrete' by Professor J. Mesnager. The art of building, almost as old as humanity itself, has not escaped the profound changes in technique which marked the 19th century. The new material, reinforced concrete, has given rise to new conceptions of construction and architecture with results which are 'marvellous to our eyes.'

Professor Mesnager assigns to the year 1849 the birth of the new material and divides its subsequent life into two periods, infancy to 1906, 'triumphant adolescence, prelude of a long fruitful life' from that date to the present. Prior to the middle of the century there were practically only two available building materials, stone (and, of course, brick, which may be regarded as an artificial stone) which admirably withstood compressive stresses but stood up very badly to tension, which required for its use highly skilled labour and which could only be employed in large masses, and timber, which could withstand limited tension and which was much employed in light structures. Already some architects had tried to reinforce stone by bars of iron which the growth of the iron industry was making available and which could, with little weight in themselves, support very great tensile loads. The birth and development at about the same time of the cement industry gave rise to visions of bars of iron embedded in a plastic concrete which after some hours of hardening would possess properties analogous to those of stone. This was the idea of reinforced concrete.

We confess that before we read this paper we believed that reinforced concrete had had its birth in a problem arising out of the construction of big flower pots. Our little story is not far from the truth. It is quite true, M. Mesnager assures us, that Joseph Monier, a gardener of Versailles, used this method to make very large flower pots more durable than the wooden tubs which had sufficed hitherto. He extended his application of the idea to other constructions—water tanks, troughs, pipes, and so on, required in agriculture and he took out patents which were acquired and exploited particularly in Germany and Austria where the new material went under the name of 'Monierbau.'

But as much as 10 years before that Lambot had built, in 1849, in reinforced concrete a boat which floated successfully at the Exposition Universelle of 1855. Almost at the same time a house was built in concrete at Saint-Denis with floors constructed with metallic joists embedded in concrete. The builder was François Coignet who was thus the first builder in reinforced concrete and who made a speciality of the application to many uses of concrete built within shuttering. But it was François Hennebique who first reduced the original ideas, first guided by intuition and empiricism, to a system and showed how to calculate proportions and strengths for more important structures. All these names are well known throughout the world.

Reinforced concrete was quickly applied to the construction of reservoirs and tanks, bridges and roofs of moderate span. It was quickly seen to be applicable with great advantage and economy to foundations and retaining walls; piles of reinforced or hooped concrete replaced those of timber. The new material reached adolescence when in 1906 an Official Regulation was issued by the French Government setting out the rules under which the new material was to be fabricated and used. Since then improvements in the manufacture of cement and steel, and the accumulation of knowledge and experience in many forms of construction, have been matched by successive amendments in the Official Regulations.

We called attention in our issue of June 7, apropos the excellent paper 'Forty Years of Reinforced Concrete' by Messrs. Rose and Gedge, to the further possibilities held out by the new techniques now coming into use. M. Mesnager emphasises the point that the use of pre-stressing marks one of the most important advances of recent years and awards to M. Freyssinet the merit of having noted that with the use of steel with a high elastic limit it is possible to give the reinforcement sufficient pre-tension so that the effect of alternation of stress in giving rise to cracking will disappear.

The uses of reinforced concrete in gasworks construction and some of the difficulties were admirably described by Messrs. Rose and Gedge. They indicated how most of the difficulties were met and overcome. Purifier boxes and their supporting structures, coal and coke bunkers, water and liquor tanks can all be successfully and economically built in this material as well as the usual civil engineering features of the works, foundations, retaining walls, gantries, etc. Above ground some applications are just now discouraged by the scarcity of timber for shuttering and the shortage of skilled joiners for its erection.

Some prominent structures, such as large bunkers, have become unsightly because of the nature of the surface exposed to view. Is it possible to hope that some means may be found to cover these surfaces with a material which will be washed and kept clean by the rain—the particular merit of a smooth-finished brick? In the retort house, the effect of heat on concrete renders it generally unsuitable for the construction even of the outside of the retort bench and its rigidity is a disadvantage when it is asked to take the thrust of so 'live' a load as the expansion and contraction of a retort setting. For platforms or indeed for the building itself its relatively greater bulk makes any prospect of economy doubtful of attainment by the new material. Corrosion has been met by the introduction of special cements and these may lead to new applications in the gasworks. There is no longer any reason, for instance, why columns supporting any sort of overhead structure should be constructed in steel or iron standing surrounded by heaps of coal, coke, or oxide with consequent risk of unseen deterioration.

The future of reinforced concrete is assured—it has given the engineer the means of using 'stone in tension,' of building cantilevers in a non-corrosive material. Quoting M. Mesnager, among the numerous causes militating in its favour are the possibility of adapting the resistance of the material to requirements by a suitable choice of aggregate and proportions of the mixture with consequent great technical and economic flexibility, rapidity of construction by relatively low-skilled labour, ease and cheapness of maintenance.

CONSUMER RELATIONS

GAS consultative councils have a two-way function—consultation with the area boards and consultation with consumers. Apart from the day to day contacts of gas industry personnel with the public they act as a bridge between supplier and consumer. Many of the complaints that have come before them in their running-in period have been frivolous and ill-informed. Most of the members have known the industry only from the standpoint of the consumer, but they have shown a commendable readiness to learn more about the administration of the industry and the problems with which the area boards have to deal. As example, the Eastern Gas Consultative Council (whose Chairman has spent all his professional life in the industry) having been enlightened by the Chairman and Deputy Chairman of the Board on matters of general policy, last week heard a talk by the Secretary of the Board on the difficulties in rationalising gas tariffs. Mr. Epps suggested that members of the Council should have continually before them the principle which has grown up during the first half of the century and is now gaining general recognition, that the strong must help the weak and the rich must help the poor. That principle is paramount in national finance and it is not unreasonable to suppose that ultimately it will extend to nationalised industries.

The Area Board's tariff policy must embrace the whole area, and members were asked to think of the area as a whole, and not as individual parishes. Once members take their seat on the Council they become representatives of all consumers in the area. If that view is adopted, with the co-operation of the Board they can open up to consumers a horizon beyond that of the parish boundary. The Board supplies gas to 650,000 consumers spread over 7,100 sq. miles; 95% of its consumers use 68% of the total sales for domestic purposes; 1% use 17% for industry, and 4% use 12% for commercial purposes. On vesting date the Board inherited 444 gas tariffs embracing flat rates, two-part tariffs, step rates, and block rates, with considerable variations. Gas was being charged at special rates under 363 special contracts, and in one undertaking alone there were no fewer than 76 different tariffs, mainly for geographical reasons.

The Board has set up a committee which hopes to produce proposals for a balanced tariff policy within the next six months. The prospects of uniform charges are remote, but if some measure of uniformity in *basis* of charge can be attained it will go far towards satisfying consumers who in present circumstances are liable to feel aggrieved when others with like consumptions are paying a fraction less for their gas, and it will help to simplify the accounting work of the Board's staff. On one question Mr. Epps caused disappointment. He could hold out no hope whatever that the annual report and accounts of the Board would reveal the detailed results of individual undertakings. Members of the Consultative Council, and the public, will have to be satisfied with area statistics.

UNIFORMITY OF TARIFFS

THE aim of every gas board is to achieve greater uniformity of gas price. Particularly interesting, therefore, is the announcement by the North Thames Gas Board (published in detail on a later page) that this aim has been achieved in its extensive area of supply. It is believed that this is the first board, either gas or electricity, to introduce a uniform flat rate; and, as Mr. Michael Milne-Watson pointed out in making the announcement, this has been possible because of the 'grid' which covers almost the whole area of supply. It is inevitable in introducing any uniform tariff throughout so large an area that some consumers will have to pay more for their gas—but at the same time others will pay less. The new flat rate, which comes into force on January 1, will be 16.1d. per therm, which for some 80% of the Board's consumers will mean an increase of ½d. per therm. A domestic two-part tariff will be available on the basis of 22s. 9d. quarterly standing charge, with all gas at 12.1d. per therm and no meter rent.

WINTER COAL PROSPECTS

THE coal situation is not satisfactory, and the statement of the Minister of Fuel and Power in the House of Commons last week (see 'In Parliament' on a later page) gave no cause for jubilation. Mr. Noel-Baker explained that inland coal consumption this year will be nearly 22 mill. tons more than in 1945, and 35 mill. tons more than in 1938. Including house coal, inland consumption will be 6 mill. tons more than in 1949. At the end of October stocks were lower by 700,000 tons than had been hoped for; and the Government had instructed the National Coal Board to buy coal abroad. The amount contemplated is, said Mr. Noel-Baker, in reply to a question by Mr. Anthony Eden, a 'marginal amount, a part of one week's output here. We shall buy it where we can find it; I expect some in the United States and I hope some elsewhere.' In the meantime exports have been cut and rearmament has so far hardly begun. Weekly average coal production is running at a lower level than at the same time last year. In 45 weeks of this year disputes are officially estimated to have cost 815,000 tons of coal. More and more miners are leaving the pits for other work. The task carrying first priority is to reverse this trend.

COKE DELIVERY AND STORAGE

SOME interesting points on the subjects of coke delivery and storage emerged from two papers presented at the autumn meeting of the London and Counties Coke Sales Circle. The problems of the merchant were dealt with by Mr. J. Charrington, jnr., while Mr. J. Pinckheard provided the views of an architect. On the subject of storage, the principal problem lies in the modern blocks of flats. We are with Mr. Pinckheard in his lack of enthusiasm for the suggestion that landlords, usually local authorities, should enter the field of solid fuel trading by providing tenants with coke inclusive in the rent. Even less practical, however, was another proposal for bulk storage of coke in hoppers on the roof which feed each individual flat through systems of trunking. We picture ourselves taking our Sunday afternoon siesta when the tenant on a floor below elects to replenish his storage—and several hundredweight of coke come thundering down the metal trunking embedded in our wall. In such circumstances, too, the lower floor tenants might well find themselves the unwilling recipients of a high proportion of breeze following the violent descent of their fuel through hundreds of feet of trunking. More practical was the proposal to provide each flat with a self-contained hopper fed by a gravity chute from a trap in the landing immediately above. This would obviate the possibility of petty pilfering and is an idea which might well be incorporated as an integral feature of modern flat construction.

THE BUILDING CENTRE

THE function of the Building Centre has been described too often in these columns to require repetition. It will be recalled that in October, 1949, we published an account of the opening of the newly-designed gas section. Since then this permanent exhibition of the best in gas appliances has been kept up to date and appliances have been changed at regular intervals. It will be appreciated that the Gas Council has a three-fold responsibility—to the Building Centre management, to the 1,000 architects, builders, and students who visit the section each month, and to the manufacturers, who are well aware that this is the finest shop window for their products in the country. Few would dispute that this responsibility is faced with impartiality and a clear desire to do the best for all concerned. One of the Council's duties is to keep the section in the Press mind and thus, indirectly, in the public mind. Accordingly, on November 21, a considerable number of journalists were invited to inspect the section which, it was claimed, included 30 appliances not previously shown in this exhibition. Now we are the first to appreciate that artistic licence is an integral part of effective publicity, but we could discern only four new appliances in the section; it would seem to suggest that even licensing has its limits. The section looked as well as ever, and although the proposed removal of the Building Centre to new quarters next year raises the hope that the new section will be somewhat larger, thus bringing it into line with the electrical section, it is perhaps some cause for regret that this will mark the end of the useful life of the present gas exhibition, which has served the industry so well.

SULPHUR SUPPLIES

BRITISH imports of natural sulphur in the first nine months of this year totalled 346,194 tons, of which 346,078 tons came from the United States of America. Since the outbreak of the Korean war the sulphur shortage has become more apparent, and the writer of an article on the subject in the *Financial Times* comments that the position will be severe in 1951 if cuts in American exports to Europe are put into effect. These cuts will affect all 18 countries in O.E.E.C.; and the writer of the article in question suggests that a cut of 50% for Great Britain would not come as a surprise. We are told that, in theory, 100% extraction of sulphur from town gas would result in supplies of sulphur greater than Britain's total consumption. The gas industry cannot be proud of the way in which it has tackled sulphur removal from its main product since the beginning of the present century. The story is indeed a sorry one. More recently the war, the threat of nationalisation, the operation of nationalisation in checking capital expenditure, steel allocation, and so on, have been cited as stumbling blocks to progress. But during the period between the two wars there was little will in the industry to remove sulphur from town gas down to a reasonable limit. The article to which we have referred puts forward the view that given more encouragement by the Government, desulphurisation both of town gas and industrial gases could make a valuable contribution to sulphur supplies. It goes so far as to say that 'in the national interest the Government should help to effect this addition to available resources in this country.' Capital expenditure would be necessary, but the recovery of sulphur as such would have its advantages. It is argued that the manufacture of sulphuric acid from sulphur would be cheaper than from pyrites.

HIGHER TECHNOLOGICAL TRAINING

THE first report of the National Advisory Council on Education for Industry and Commerce, set up in 1948 by the Minister of Education, was published last week. The main recommendations of the Council are the establishment or development of courses of a high standard in technology; the creation of new awards of degree standard; and the establishment of a Royal College of technologists to approve such courses and confer the awards. At the present time both the universities and the technical colleges are concerned with the training of technologists, the technical colleges dealing more with students coming direct from industry. The Council agrees that the universities have a specific function to perform in the development of technological education and that their work should be more closely related to fundamental science than that of the technical colleges, their courses, in general, containing a smaller amount of training related to immediate or special work in industry. The contribution of the technical colleges is already considerable. In 1948, 7,100 students were taking full-time courses of a degree standard with a further 9,784 taking part-time courses. The Council considers that given a radical improvement in finance, equipment, staffing, and accommodation, these colleges could and should provide more high-level courses of a degree standard and courses for post-graduate work. They also feel that a suitable award is necessary to encourage students to undertake these advanced courses and recommend an Associateship of the suggested Royal College as the first award, Membership for the second award, and Fellowships and Honorary Fellowships for those who further distinguish themselves in technological education and research.

NEW 'HOUSE ORGANS'

WHETHER 'house organs' is still a term which can properly be applied to gas magazines we are not quite certain. At any rate two noteworthy new publications of this kind make their bow this autumn. Both are from the Eastern area—one from Ipswich and the other from Norwich. We have always been impressed by the high standard of our industry's staff magazines; and any doubts we may have felt as to their fate under nationalisation have been wholly dispelled by the excellent periodicals which have succeeded the pre-1949 gas undertakings' magazines. The value of maintaining understanding and goodwill—in short, the human touch—within a business organisation is so vital to its progress that it would be trite to enlarge upon it here. It is pleasing to find this principle perpetuated in the nationalised industry. Equally gratifying is the fact that all these magazines preserve an individuality of size, style, presentation, and make-up which, combined with topical news interest and freedom of comment, go to make the British Press the finest in the world. Both magazines are launched with a personal message from their Divisional General Managers. The Ipswich publication contains 40 pages of real live interest, liberally illustrated, and admirably put together. The Norwich publication bears the apposite title of *Thermag*, and here again we have an example—in a rather different form—of the same high standard of journalism. The editors are to be congratulated on two fine productions and have no need to crave their readers' indulgence (as does the Norwich editor) for printers' errors which creep into the turmoil of press day. We for our part have not spotted any; but if we did it would be delightful to find such examples as those quoted: 'Massage from the General Manager;' 'To obtain free booklet on Care of the Teeth send 6d. postal order. Please do not send loose stumps;' or 'Just before 10 o'clock the Chairman adjourned the meeting as there were still several pints to be cleared up.'

Personal

Sir **Walter St. David Jenkins,** C.B., C.B.E., who has been Chairman of Elliott Brothers (London), Ltd., for many years, has felt it necessary to hand over the onerous duties connected with this post to a younger man. Sir Walter has agreed to remain on the board of the company, to whom his long and valuable experience will continue to be available. Captain **R. E. F. de Trafford,** O.B.E., has accepted the chairmanship.

Mr. **E. W. Fry** (Bampton) has been appointed a member of the South Western Gas Consultative Council.

◇ ◇ ◇

Mr. **P. J. Ferguson** is relinquishing his appointment as Scottish Branch Manager of the British Aluminium Co., Ltd., which he has held since he joined the Company in November, 1946, to take up a new appointment at the head office of the Company in London as Export Sales Manager. Mr. **M. J. J. Richards,** of the Company's Midland branch office, has been appointed Scottish Branch Manager in place of Mr. Ferguson.

Obituary

JOHN WILLIAM COBB

The death occurred on November 26 of Professor John W. Cobb, C.B.E., D.SC., B.SC., F.R.I.C., HON.M.INST.GAS E.

Professor Cobb, who was born in 1873, received his early education at the Leeds Modern School, was a Scholar and Prizeman of the University of Leeds, and was an Exhibitioner of the University of London. From 1891 till 1912 he was engaged with the Farnley Iron Company, during which period he was responsible for the control and development of fuel-using processes at the Company's works. During this period, too, he made many contributions to scientific journals concerning coal, the working of furnaces, refractory materials, and corrosion. On the retirement of the late Professor W. A. Bone from the Livesey Chair at Leeds University, Cobb was appointed successor—a post which he filled with great distinction till his retirement in 1938. For four years prior to this he had held the office of pro-Vice Chancellor. When he was appointed to the Livesey Chair the Fuel Department at Leeds University was in its infancy; under his guidance it grew apace in importance and scope, and on his retirement there were scores of graduates of the University occupying positions in the fuel industries in this country and abroad.

With such a long, active, and immensely valuable service to the fuel industries, and in particular to the gas industry, rendered quietly and effectively by John W. Cobb it is impossible as we go to press to do more than single out a few landmarks in his career. For his services in connection with the 1914-18 war he was appointed C.B.E. in 1919. It was in that year that the outstanding report of Sir Dugald Clark, Professor Arthur Smithells, and Professor Cobb on 'Coal Conservation and the Coal Gas and Electrical Supply Industries of the United Kingdom' was published by the Institution of Gas Engineers and placed before the Government as representing the considered views of all sections of the gas industry. The following years saw a closer as well as an expanding collaboration between the Institution and the University of Leeds in gas industry research; and, throughout, Cobb's sound and penetrating judgment was a major factor. His opinion was constantly sought, and the years of his active participation in the conduct of research were a time of great productivity. His unassuming mien was coupled with a purposeful influence which helped to mould a new conception of the science of gas-making and of the place of a technically-manned gas industry in the national economy. In 1938 his many friends in the industry subscribed to a 'Cobb Fund' to mark his retirement, and it was wholly characteristic of Professor Cobb that he should devote this to the welfare of students in the Fuel Department of Leeds University.

Professor Cobb was elected an Hon. Member of the Institution of Gas Engineers in 1914, and at the time of his death was the oldest Hon. Member. In 1940 he was one of the three recipients of honorary degrees conferred by Leeds University, in which year the University restricted the honour to three eminent Heads of Departments who had retired. The degree of Hon. D.Sc. was then conferred upon him.

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Mr. **David Robb,** Assistant Superintendent at Uddingston works, died in hospital on November 21. He was 48 years of age.

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Mr. **Charles H. Eves,** who has died aged 80, retired from the post of District Superintendent of the Reading Gas Company in June, 1936, after working for the Company for nearly 35 years. During that period the undertaking made great strides, and Mr. Eves did valuable work in connection with this growth.

Sir **Frederick Bain,** M.C., who as reported last week was recently appointed an Hon. Member and Hon. Vice-President of the Association of British Chemical Manufacturers, died at Westminster Hospital on November 23, aged 61. He was best known as a Deputy Chairman of Imperial Chemical Industries, Ltd., with which company he had been associated since its formation in 1926. From 1947 to 1949 he was President of the Federation of British Industries.

Diary

Nov. 30.—North Thames Gas Consultative Council: Westminster City Hall, Charing Cross Road, 2.30 p.m.

Dec. 2.—Scottish Junior Gas Association (Western District): Joint Meeting with Eastern District, Heriot Watt College, Edinburgh. Paper by G. V. C. Davies (Humphreys & Glasgow, Ltd.).

Dec. 5.—London and Southern Section, Institution of Gas Engineers: 'Domestic v. Industrial Cost per Therm,' H. Bromley, Western Divisional Distribution Engineer, Southern Gas Board. Institution of Gas Engineers, 17, Grosvenor Crescent, 2.30 p.m.

Dec. 5.—Institute of Fuel: Opening meeting of Study of Drying. 'Some Fundamental Aspects of Air-Drying of Solids,' by R. Hendry and Dr. A. W. Scott; 'The Determination of Moisture in Coal,' by E. G. Barber; 'Methods of Estimating Moisture,' by A. H. Ward. Institution of Mechanical Engineers, Storey's Gate, S.W.1, 5.30 p.m.

Dec. 6.—Southern Gas Consultative Council: Firs Hotel, Bournemouth, 11.30 a.m.

Dec. 7.—Industrial Gas Development Committee : Gas Industry House, 9.30 a.m.

Dec. 8.—Northern Junior Gas Association: Short Paper meeting, Darlington.

Dec. 8.—London and Southern Junior Gas Association: 'Aerated Gas Burners,' E. E. Blandon and J. V. Rigg, 178, Edgware Road, W.2, 6.30 p.m.

Dec. 12.—Wales and Monmouthshire Junior Gas Association: Meeting, Aberdare. Paper by D. T. Phillips (Mountain Ash).

Dec. 12.—Midland Junior Gas Association: Meeting, Birmingham. Paper, 'Thirty Years of Carbonisation,' J. Foxton (Cheltenham).

Dec. 16.—Yorkshire Junior Gas Association: Short Paper Meeting, Bradford.

TECHNICAL DATA ON FUEL*

THIS fine reference book goes a long way to establishing Britain's right to the leading position in the World Power Conference, the position which she ought, indeed, to occupy as the country of origin of the industrial use of fuel. The Committee who sponsored it, under the chairmanship of Sir Ernest Smith, and Mr. H. M. Spiers, its Editor, are to be unreservedly congratulated on a magnificent achievement. Already a great and most useful compilation in its First Edition, which appeared as one of the British contributions to the World Power Conference of 1928, the Fourth Edition of 1935 was a fine piece of work called for by fuel technologists to the extent of four additional impressions. That edition contained about 350 pages. The present, Fifth Edition, covers no less than 500 pages of matter indispensable in fuel technology. There is not a wasted page.

A quick glance through reveals the addition of much new data, the re-writing and re-arrangement of some of the sections, as well as the enlargement of others. Turning to our own subject, Gaseous Fuels, we find this section extended from 17 to 31 pages, mostly accounted for by the addition of data on the spontaneous ignition and inflammability of gases and the addition of a new sub-section on pumping and compression. There is a very little note (about three lines) on gas meters. Sir Ernest in his preface modestly disclaims completeness and invites suggestions for new matter. There is, of course, much data in the book on the flow of gases in pipes and through orifices which is no doubt useful to the meter designer, but one wonders whether a little more might have been included about an appliance so important and so ubiquitous as the gas meter—the useful range and limits of accuracy, for instance, of the several types in use.

Then the table of correction of gas volumes for temperature and pressure is still limited to the minimum of 28 in. of mercury. We can think of two industrial areas, one of very great importance, in the world—and this is a world reference book—where atmospheric pressures go considerably lower than this. It is quite properly requested that suggestions of this sort are most welcome 'if they are accompanied by the relevant information.' We are sorry we cannot do this in every case but in this instance we can point to a table in the (American) Gas Engineers' Handbook of 1934 which goes down to 22 in. of mercury. We miss, too, some reference to and data cabled from recent work on combustion characteristics and the several types of test burners which have been devised—though no doubt much of the data already included has a bearing upon this subject. We also realise that sketches of apparatus are, generally, outside the scope of this book.

The next section of direct importance to our industry is that on refractories, and here we found it completely and pleasantly re-written at a length nearly three times that of the Fourth Edition. A suggestion we should like to make, without alas! being able to give a reference to the relevant information, just because we do not remember to have seen it anywhere conveniently collected, is that an outline of standard methods of analysis and testing might be added to this section. The section on solid fuels is enriched by a full exploration of Seyler's Coal Charts, by the N.C.B. Coal Survey Classification (why was not Dr. King's classification also included?) and by a new sub-section on the reactivity of coke. Other new subjects are the properties of coal tar fuels and an important section on the It diagram, both general and in its application to combustion in oxygen and oxygen-enriched air.

The whole treatment of the subject of flow of fluids in pipes and their measurement is very greatly enlarged and enriched. A new sub-section on the properties of mixtures of air and steam strikes one as being most useful not only in connection with driers generally, but of particular interest just now in the operation of producers, new forms of which are so rapidly coming into use in gas manufacture. Here we noted that there is a much more generous provision in this edition of illustrative examples, a provision for which the weaker brethren at any rate will be very grateful. The section on heat transfer now contains much new data including a sub-section on flame radiation from Schack.

The book is printed in the same type and format as previous editions. It is already so well-known that praise of its legibility and convenience in handling would be superfluous. It has always been in pleasing contrast to some of the unwieldy tomes which cumber our laboratory and office's shelves.

* Fifth Edition, Published by the British National Committee, World Power Conference, London, 1950, 515 pp.

Costs of production have risen to such an extent over the past nine months that we have had to increase our Subscription Rates. The new rates will operate from the beginning of 1951 and are as follows:—Home and Empire 52/-. Foreign 60/-. The rates include postage. As before, subscribers will receive free a copy of the *'Journal'* Calendar and Directory.

WOMEN'S GAS COUNCIL

THE Sixth Branch Conference of the Women's Gas Council was held on November 13 and at Gas Industry House. Delegates, consisting of secretaries, officers, and members from between 30 and 40 branches—as far apart as Airdrie and St. Austell—were joined by a number of distinguished visitors among whom was Dame Vera Laughton Mathews, D.B.E., recently appointed Adviser to the Gas Council on women's affairs.

In the unavoidable absence of Miss K. M. Halpin, O.B.E., the President, Miss C. E. Ellington Wright, M.B.E., the Chairman, welcomed the delegates and introduced Dame Vera, whose presence at the Conference was a further proof of her interest, already shown in many ways, in the work of the Women's Gas Council.

The speaker at the opening session on Monday afternoon was Mr. L. W. Andrew, of Watson House, and his subject, 'Hot Water, The Present and Future.' Mr. Andrew, in an interesting and informative, as well as entertaining, talk, said that the principal aims of the industry at present were to increase the flow of hot water, to lessen work, and to reduce the cost.

On the second day, visits were made by various groups of delegates to the Mothercraft Exhibition, to 'Gas in the Design for Living' at the Building Centre, to the Hotel School, Westminster Technical College, and to the Good Housekeeping Institute. Luncheon was arranged for one party at the Hotel School, and the other in the Women's Gas Council members' room at Gas Industry House.

The afternoon began with a special session, for Officers and Committee Members. With Miss Humphries (Vice-Chairman, National Executive, and Birmingham Branch Organiser), in the Chair, branch affairs were discussed and a number of interesting and helpful suggestions were made by the branch representatives.

Later in the afternoon, Miss Helen Burke, cookery expert and well-known broadcaster, addressed a large audience, increased to about 120 by the addition of Headquarters members invited to join the conference to hear the talk on 'The Careful Shopper and the Good Cook.' Miss Ellington Wright, Chairman, was in the Chair.

Bury St. Edmunds Trades Fair

THE Bury Trades Fair was held recently in the Corn Exchange, and the Eastern Gas Board, Bury St. Edmunds District, was again in evidence with a very attractive stand. The main theme of this year's exhibit was 'Hot Water by Gas,' and over a dozen 'live' appliances were on view. The centre piece was designed and built entirely by the undertaking's own staff. It consisted of a hot water display produced by two heaters, the hot water cascading down an illuminated glass path and discharging into a receptacle below. At the base of this cascade a goldfish pond was mounted, surrounded by flowers. All the hot water apparatus on the left-hand side of the stand was working. On the extreme right was shown a new unit by Radiation Group Sales, consisting of a 20 gall. lagged hot water cylinder with the new C.12 circulator fixed *in situ*. The Ascot continuously pouring coffee pot was also in action. During the whole of the time the stand drew much attention of the public, and the results obtained in the sale of apparatus and enquiries received leave the undertaking's staff in no doubt that it was well worth while. The total attendance at the exhibition during the 2½ days it was open was slightly over 17,000.

Gas Strikers' Appeals

THE appeals by the 10 gas strikers who were sentenced to one month's imprisonment by the Chief Magistrate (Sir Laurence Dunne), at Bow Street Court, for their part in the recent London gas strike, were heard by the London Sessions Appeals Committee on November 21.

Mr. Christmas Humphreys, for the Director of Public Prosecutions, said that when before the Chief Magistrate he told him that the men must have been aware of what was the law. He would now modify that to some extent as the result of information which he had since received. It was now possible that some of the men did not appreciate that they had committed a criminal offence although they knew they had broken an agreement which had bound the Trade Union movement. They were men of perfectly good character who might not have appreciated they were actually committing a crime.

The committee retired, and upon returning the Chairman said that when before the Magistrate it appeared that the 10 men, with the full knowledge of the law and its consequences, deliberately set at defiance and took the law in their own hands. If that was the true picture of the nature of the offences committed, then it would have been quite impossible for the committee to say that the sentences of one month's imprisonment were in any way excessive. They were now invited by counsel who appeared for the respondents to take a different view, as although they were aware they had not adopted the proper conciliation machinery, they were unaware they were offending against the criminal law. The prosecution had apparently served its purpose as everybody now knew that to take the action these men did would be an offence against the criminal law. Nobody any more could place before any court, after this prosecution, the argument that persons who offended against the regulations were unaware they were offending against the laws of the country.

Their appeals against sentences were allowed and varied to fines of £50 on each appellant. No order as to costs was made. The men were given six weeks in which to pay the fines.

Coke Sales Circle

An extraordinary general meeting of the Coke Sales Circle of the London and Counties Coke Division was held at Gas Industry House, London, on November 15, under the chairmanship of Mr. W. E. Daniel. The business of the meeting was to approve an addition to the rules with reference to the voting powers of associate members. It was unanimously agreed that the words '5. *Voting Powers* —Voting powers shall be confined to ordinary members and the chairman shall have a casting vote if necessary,' be inserted after paragraph 4 of the existing rules.

The autumn meeting of the Circle followed at which two papers were presented: 'A Distributor's Problems in Connection with the Supply of Coke,' by Mr. J. Charrington, jnr., and 'An Architect's Views on Solid Fuel Storage and Delivery,' by Mr. J. Pinckheard, A.R.I.B.A.

Woodall Duckham House

The *Gas Journal* Visits the Head Office of the Woodall-Duckham Organisation

Fig. 1.—The Reception Hall

AT the completion of the second world war the Directors of the Woodall-Duckham Vertical Retort & Oven Construction Company (1920), Ltd., were faced with the difficult problem of finding suitable office accommodation in London for their Head Office staff—then in temporary wartime offices at Guildford. The problem was intensified by the increasing numbers of the staff, due to steady recruitment to cope with the growing volume of business and to the welcome return of men and women from the Forces. As a temporary expedient some departments returned to the Company's pre-war offices in Victoria Street, London, S.W.1. It had, however, already been agreed that for efficient working all departments must be housed in one building. The decision was therefore taken to find entirely new premises. The building at that time of a block of offices of a size adequate for the complete Woodall-Duckham organisation was out of the question. The only alternative was to find, adapt, and, where necessary, alter an existing building so that it would be suitable, always bearing in mind the very special requirements of a large drawing office.

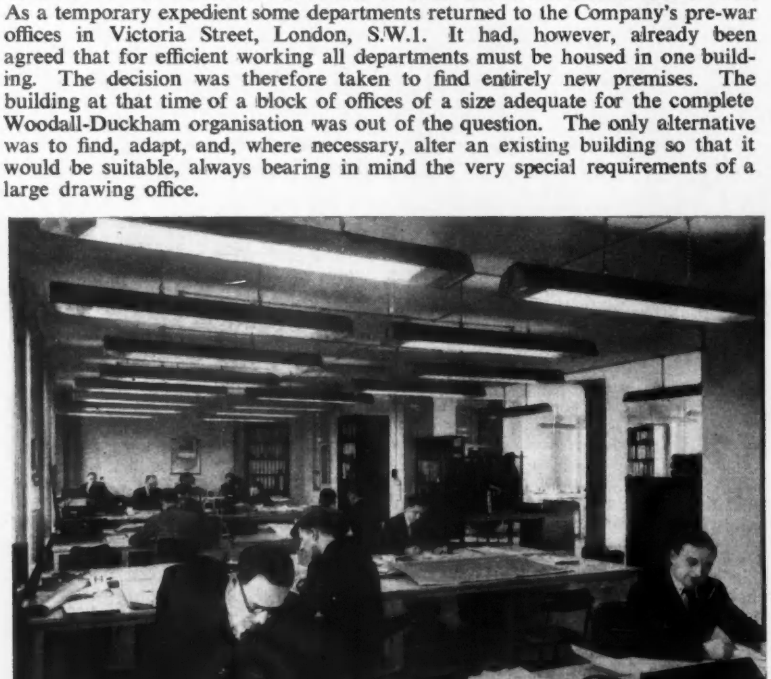


Fig. 2.—The Estimating Department

After some searching, premises were acquired in Brompton Road, London, S.W.3. During the war the building had been occupied by the Royal Army Pay Corps. The task of converting a war-damaged building into a block of modern offices was entrusted to Messrs. Lanchester and Lodge, who acted as architects for the scheme.

Today Woodall - Duckham House accommodates under its roof the entire Head Office staff of the Woodall-Duckham Company—numbering over 550 men and women. The building, which has a total floor area of over 70,000 sq. ft., comprises five floors divided into over 100 rooms and a large basement in which there is a new cafeteria capable of serving up to 250 hot lunches at a sitting.

The accompanying illustrations, which have been selected from a series of photographs taken by the *Gas Journal* Staff Photographer, give some idea of the size of the offices and also, since they were taken during 'office hours,' the actual working conditions.

Naturally the design of an office is largely influenced by the work undertaken by its occupants, and a description of Woodall-Duckham House would be incomplete without some mention of the organisation which it houses.

Briefly the Woodall-Duckham Company designs, constructs, and puts into operation coal carbonising and by-products recovery plants for the gas and coking industries in Great Britain and many other parts of the world. At the present time the Company is constructing each year plants to the value of £6 mill.

From the study of an organisation chart the *Journal* has been able to obtain a picture of how the Woodall-Duckham Company works.

The Company is controlled by a Board of full-time Directors each of whom has some specific administrative or departmental responsibility. There are nine main departments of the Com-

Fig. 3.—One of the Setting Brickwork Drawing Offices.

pany all located in Woodall-Duckham House. These are designated:—Sales (Gas); Sales (Coke Ovens); Drawing Office; Estimating; Services and supplies; Construction; Operation; Design and Development; Secretariat.

Although Sales (Gas) and Sales (Coke Ovens) are separate departments—each with its own specialists—much of the work is on parallel lines and there is considerable collaboration between the two departments. As the names suggest Sales (Gas) deal principally with enquiries for gas-making plants—*e.g.*, installations of continuous vertical retorts—or intermittent vertical chambers whereas Sales (Coke Ovens) are concerned primarily with coke oven and by-product recovery plant enquiries. The work of these two departments includes the preparation of complete schemes, specifications, and tenders.

The drawing office, with a total staff of some 250 men and women, is the largest single department in Woodall-Duckham House. It is sub-divided into four main sections:—(A) A projects section, where in conjunction with the two sales departments, all projects and schemes are developed. (B) A steelwork section where structural steelwork, buildings, foundations, coal and coke handling plant and civil engineering work generally are designed. (C) A brickwork section where the specialised drawings of the refractory brickwork of coke ovens, retorts, chambers, etc., are produced. (D) A mechanical section which is responsible for the design of castings, machines, boilers, by-product apparatus, and pipework of all kinds. In addition to the main sections there is a records section, wherein some 200,000 drawings and prints are indexed and stored, and a printing department which produces over 2,000 dye-line or blue prints in a week.

Fig. 4 shows part of the mechanical drawing office and Fig. 3 one of the drawing offices in the brickwork section. Altogether there are eight drawing offices all fitted with fluorescent lighting.

In the estimating department, shown in Fig. 2, the costs of the schemes prepared by the sales departments are carefully ascertained.

The supplies and services department is a group of four departments—planning and progressing, purchasing, transport, and inspection. With the present shortage of materials, such as silica, fireclay, castings, steelwork, etc., systematic planning, well ahead of immediate requirements, is essential.

In the planning and progressing department each scheme is entered in the planning system at the project stage, and the necessary materials, which are covered by forward agreements with the main suppliers, are then allocated to that particular project. By this means contract completion dates can be accurately forecast and supplies of materials for the earliest delivery dates ensured. When the contract is received the detail drawings are prepared and the orders are placed by the purchasing department for all materials and equipment. Although there may be as many as 2,000 separate orders for one contract each item is included in the planning system and each item is 'progressed' until it is received at site.

The transport department is responsible for the movement of all supplies of materials and equipment between the various works and the sites.

Before leaving the manufacturers' works all refractories, castings, by-product plant equipment, and major items of fabricated steelwork are subjected to inspection by the resident or travelling inspectors.

Fig. 5 shows part of the office of the planning and progressing department (right) and the transport department (left).

The construction department is, of course, the largest employer of labour in the organisation.

The Head Office staff of the construction department directs all constructional and building work from the commencement of a contract until its completion. The department is divided into two main sections one of which handles the coke oven contracts and the other the gas-making plants. Because of the large number of contracts the latter section is further divided into four groups each with its own field force organisation. In addition to the two main sections of the construction department there is a plant section which supplies all plant and constructional equipment and has a central depôt in the Midlands, a labour department, an electrical department and a safety department.

The Operating Department has the responsibility for starting up all plants built by the Company whether gas or coke making and also, where necessary, for instructing the client's operatives. The Head Office operating engineers periodically pay a service visit to every carbonising plant built by the Company and they are also available should an emergency arise.

The Design and Development Department co-ordinates the design practice of both the gas and the coke sides of the

Fig. 4.—The Mechanical Drawing Office.

Company's business and is the focal point for the interchange of technical information with the Company's overseas associates. It is also responsible for the initiation and working out of new developments. Within this department are the sections dealing with patents, publicity, and technical information. Fig. 7 is a view of the reference library which is also the home of the 'W-D Technical Press Review.'

The remaining department of the organisation is the Secretariat—a group of four sections devoted to the business side as distinct from the technical side of the Company's activities. It comprises the secretarial department, which includes all the office service departments, the accounts department, the costing department, and the personnel officer.

One of the major problems which faces an architect when converting an existing building to offices wherein large numbers of staff are to be accommodated is that of providing adequate ventilation. At Woodall-Duckham House the ventilating system on the ground floor comprises both air supply and air extraction. The air supplied, which is warmed in winter and thermostatically controlled to a temperature of 65° F., is equivalent to nine complete air changes per hour. Wherever possible, the ductwork has been arranged as a building feature or entirely concealed in the false ceiling over the corridors. Many of the air inlet and outlet grilles are not readily detectable since they have been incorporated in the bronzed light fittings. A similar air supply and extraction system has been provided for the cafeteria and kitchen but the rate of air changes per hour has been increased to 14 and 35 respectively.

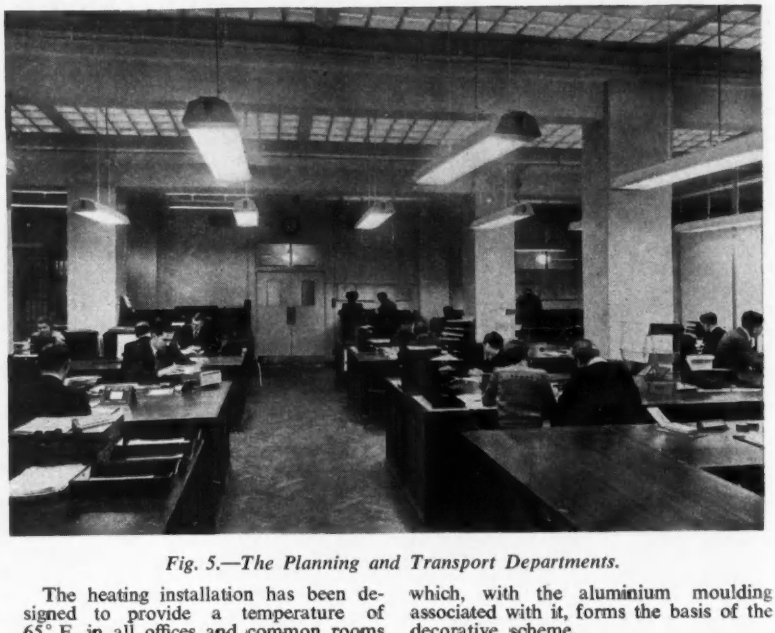


Fig. 5.—The Planning and Transport Departments.

The heating installation has been designed to provide a temperature of 65° F. in all offices and common rooms with a slightly lower temperature for corridors, etc. The existing boilers were inadequate for the new heating and ventilating loads and a thermostatically controlled gas-fired boiler rated at 1,250,000 B.Th.U./hr. has been added.

Throughout the offices woodblock floors, cream walls, and pale cream ceilings are standard. The interior partition walls have mainly been constructed of 'Holoplast,' a cream plastic panelling which, with the aluminium moulding associated with it, forms the basis of the decorative scheme.

The cafeteria, which is of the self-service type, is linked with a completely new kitchen provided with all the latest gas heated equipment. Fig. 6 shows the self-service counter.

We came away from Woodall-Duckham House with the impression of having seen a carefully co-ordinated and virile organisation in which the staff work in well planned and congenial surroundings.

Fig. 6.—The Cafeteria and Self-service Counter.

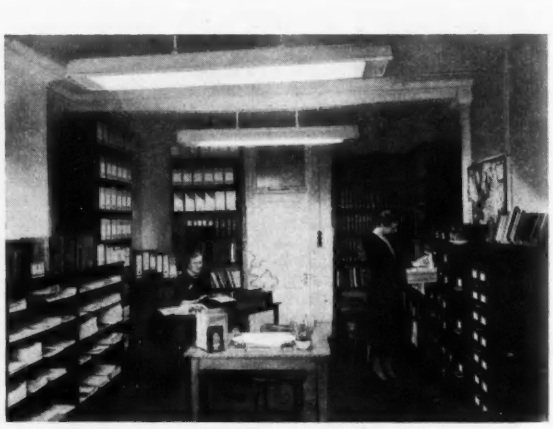


Fig. 7.—The Technical Library.

Coleraine Borough Council has placed a contract with **Tully, Sons & Co., Ltd.,** Newark, for a 500,000 cu.ft. per day hand-clinkered automatically-operated carburetted water gas plant.

The Calor Gas (Distributing) Co., Ltd., has transferred its head office to Poland House, 161-167, Oxford Street, London, W.1. (Telephone: Gerrard 7451-7455, five lines).

A comprehensive new catalogue just issued by the **Rawlplug Company, Ltd.,** lists all the diameters, lengths and prices of Rawlplugs and Rawlbolts which are an everyday need for plant installation and maintenance. This catalogue illustrates and describes many other fixing devices which are made by the Company. The Rawlclip, for instance, is an ingenious device for clipping to girders to carry cables, conduits, pipes, etc., at any angle. Among the fixings for thin and hollow materials there is listed an anti-vibration device consisting of a tapped nut bonded in tough rubber. This 'Rawlnut,' as it is called, can be used for blind fixings in any material from sheet metal to laminated and insulating wall boards, hollow bricks and tiles. There is also listed the Rawlplug durium drill with the carbide tip specially ground for penetration into masonry.

IN PARLIAMENT

Serious Coal Shortage

Government to Buy in Foreign Markets

THE House of Commons had a shock last week when, in a lengthy statement, the Minister of Fuel and Power, Mr. Noel-Baker, explained that the Government is to buy coal from abroad. The Minister also announced that coal supplies for bunkers and bunker depôts overseas are to be reduced. He attributed the fall in stocks (they were 700,000 tons lower at the end of October than expected) to the increasing demand for coal following on the country's greater industrial effort, to higher exports, and to the fall in manpower.

Mr. Noel-Baker said that inland coal consumption, excluding house coal, would this year be nearly 22 mill. tons more than in 1945 and 35 mill. tons more than in 1938. Including house coal, inland consumption this year would be 6 mill. tons more than in 1949. Next year the industrial demand for coal would be still further increased by the mounting volume of production. In the first half of 1950, he continued, exports of coal were higher by 16% than in the corresponding period of 1949. Owing to persistent rainfall throughout the summer and autumn, this year's output would fall short by about 750,000 tons of the estimates. In the mines manpower had fallen and the shortage in certain areas was seriously holding up production. In recent weeks output had fallen below the level of the corresponding weeks of last year. At the end of October distributive stocks of coal were lower by 700,000 tons than had been hoped; and if the winter was hard the margin would be narrow. 'The Government,' Mr. Noel-Baker went on, 'has instructed the National Coal Board to buy some coal abroad . . . It is clear that if our home demand continues to increase in the future as in the past our output of coal must be increased . . . I hope everyone who uses coal, both in industry and at home, will exercise as much economy as he can. I am consulting the National Coal Board and the National Union of Mineworkers about measures required to increase production during the coming winter months.

Mr. Anthony Eden (Deputy Leader of the Opposition) asked how much coal it was intended to buy, from where it was coming and how much it would cost.

Mr. Noel-Baker replied that the quantity of coal to be bought would be a marginal amount. It was hoped that it would come partly from the U.S.A. and the balance from other countries.

Mr. Eden said he understood that the figure of output contemplated this year was about the same as they were able to win from the coalface last year with a smaller labour force and less machinery than were available to-day.

Mr. Noel-Baker said he hoped it would be 2 mill. tons higher than last year. It would be about 204,900,000 tons.

Mr. Fernyhough (Jarrow, Lab.) asked if it was not preposterous that when the manpower force in the mines was declining reservists from the mines should be called up and miners allowed to volunteer.

In regard to the house coal market Mr. Noel-Baker said that this year it would receive about 1 mill. tons more than last year.

Mr. M. P. Price (Lab., Gloucestershire W.) asked if the Minister was taking steps to see that the latest fuel-saving appliances were used in industry and housing schemes of local authorities.

Mr. Noel-Baker said big economies could be made by the use of modern appliances. They were being 'pushed hard,' and the Ministry was considering what more could be done.

Sir Arnold Gridley (C., Stockport S.) remarked that many domestic appliances which would save fuel carried 100% purchase tax. Would the Minister make representations about this to the Chancellor of the Exchequer.

Mr. Noel-Baker: 'That is one of the things we are considering'.

Electricity Cuts

On November 13, Squadron Leader Donner (Basingstoke) raised the question of electricity cuts. In Hampshire on October 30, he said, load shedding stopped water pumping in farms and villages, prevented grinding and preparing of cattle food in the morning, and the use of electric milking machines in the afternoon.

Mr. Noel-Baker replied that farmers had been asked to reduce their consumption of electricity to a minimum during hours of peak demand, and that if a farmer found that a power cut might cause him loss he should consult his area board.

Squadron Leader Donner commented that the district manager of the electricity area board at Basingstoke had informed farmers that his instructions were to carry out cuts on a strict rota basis, regardless of whether those affected were farmers.

Mr. Noel-Baker said he was sure the board would try to adjust the rota in order to reduce inconvenience to a minimum.

Mr. D. H. Amory (Tiverton) asked the Minister whether he was aware of the continuing inconvenience and danger to patients in surgeries and hospitals arising from electricity cuts imposed after dusk, and that such inconvenience and danger are aggravated when cuts took place outside advertised times.

Mr. Noel-Baker replied that it was impossible to give hospitals and surgeries complete immunity from power cuts. He thought alternative lighting ought to be available.

On November 21 both Houses of Parliament were given details of the proposal to establish a National Science Centre in London. In the House of Commons, Mr. Herbert Morrison, Lord President of the Council, emphasised that it would be some years yet before the Minister of Works could build such a centre, but a start would be made on it as soon as resources could be found, having regard to other urgent claims. Provision would be made for accommodating within the area the Patent Office and its library (which would be modernised and extended as a first-rate central reference library on science and technology). Suitable new quarters would be built for the Royal Society and for other leading scientific societies with their important special libraries, most of which were now severely cramped in the rooms provided for them by the Government not far short of 100 years ago in Burlington House, or in other inadequate accommodation. New offices for the Department of Scientific and Industrial Research and other Government scientific organisations would also be provided. By this means buildings elsewhere would be released for other uses, and some economies in building requirements would be achieved.

The centre, Mr. Morrison concluded, would be designed to improve facilities and contacts between scientists and users of science, both nationally and internationally. Much detailed planning remained to be done and he hoped to announce the selection of a site as early as possible in the New Year.

A Woodall-Duckham Contract

The National Coal Board (Durham Division) has placed an order with the Woodall-Duckham Vertical Retort and Oven Construction Co. (1920), Ltd., for the design and erection of a comprehensive coke oven and by-product recovery plant to be built at Fishburn Colliery, Co. Durham.

The plant, which incorporates many modern features, will cost approximately £1.5 mill. and is designed to carbonise 1,000 tons of coal per day. It comprises 50 W-D Becker Combination Underjet type coke ovens with appropriate oven machinery, coal blending, storage and service bunkers; coke handling, screening and storage bunkers, and full by-product recovery equipment for the production of crude tar, sulphate of ammonia and crude benzole.

The contract includes the civil engineering work associated with the plant, water cooling and recirculation services, and extensive railway sidings.

Arrangements are being made by the National Coal Board for the disposal of the coke oven gas to the Northern Gas Board.

North Thames Women's Gas Council

FOLLOWING on the nationalisation of the gas industry, the North Thames Gas Board has reviewed the policy to be pursued in regard to Women's Gas Council branches within its area. At present there are branches at West Ham (Leytonstone), Southend and Rochford (formerly in the area of the Gas Light and Coke Company), Walthamstow/Leyton (former Lea Bridge Company), Hornsey (former Hornsey Company), and Windsor (former Royal Windsor Gaslight Company).

In the past the type and degree of support accorded to these branches has varied according to the policy and practice of the individual companies, and it was felt that some more nearly uniform standard should be applied. This has now been approved by the Board, which will place at the disposal of each branch premises for meeting once a month (either the demonstration hall or a hall hired by the Board for the purpose); office help, where desired, in typing and duplicating notices to members; and an annual cash grant towards branch running expenses.

To give some cohesion and uniformity of policy within the area, and to foster among the branches a North Thames sense, the branches will be linked together by a Co-ordinating Committee consisting of the Chairman of all North Thames branches, with Miss Ellington Wright of the North Thames Board as Chairman of the whole and Mrs. Joan Robins, in her capacity as Chief Home Service Adviser to the Board, as permanent ex-officio member. Contact with the Board as branch level will be secured by the presence of a senior member of the home service as ex-officio member of each branch committee.

In making these arrangements, which have been devised to adjust the Women's Gas Council set-up to the new conditions brought about by nationalisation, the North Thames Board is breaking new ground. The Board feels that they will lead to a fruitful collaboration of the branches with one another and with the Board.

The first meeting of the Co-ordinating Committee was held on November 23 at Church Street, Kensington, and to mark the occasion the Committee was entertained at lunch by the Board whose Public Relations Officer, Mr. Leslie Hardern, and four divisional and two district managers associated with Women's Gas Council branches were present.

Coke Ovens for India

The October issue of the *Simon Magazine* (house journal of the Simon Engineering Group) gives some interesting notes on recent developments in the coke oven department of Simon-Carves, Ltd., with special reference to plant in India. The large new coke oven battery at Hirapur for the Indian Iron & Steel Co., Ltd., was put to work about six months ago and is one of the finest the firm have built. Their coke oven department has established so remarkable a position in India that they have just published a special pamphlet about it. They built their first Indian coke ovens in 1908, and for more than 40 years they have been almost continuously occupied in coke oven construction or reconstruction at one place or another. For most of this period they have had their own staff of engineers resident in the country, which has greatly strengthened their position by enabling them to give speedy and efficient service to Indian users of coke ovens, whether by inspecting and maintaining plants already at work or by offering technical advice on new construction. Of the 14 Indian coking plants now in use 11 have been built by the firm, and these handle more than 85% of the 3¼ mill. tons of coal carbonised annually in Indian ovens; when work now in hand has been completed the proportion will be nearly 95%.

At home the battery of 44 ovens at the East Greenwich gasworks has just been put to work, and the firm have received an order for an extension of 22 ovens. The fourth and final stage of the rebuilding of the huge Dorman Long battery at Middlesbrough has been successfully completed; all four stages have been accomplished with great speed, and in no case has completion been behind schedule.

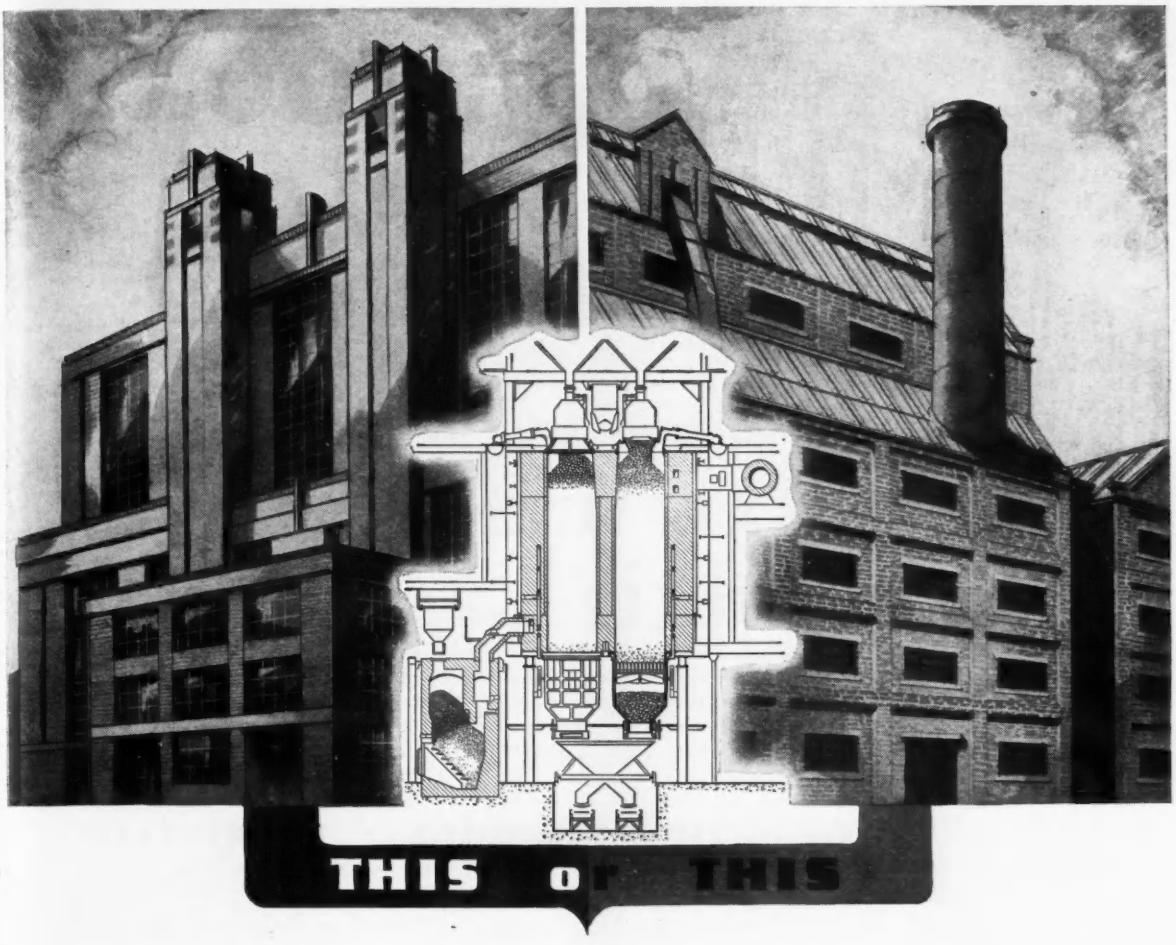
East Cowes.—Our report of the last meeting of the Southern Gas Consultative Council (November 15, p. 258) stated that the Council approved the closing down of the East Cowes works and offices. This statement was not correct; it is only the offices which will be closed, and not the works. The showroom will be kept open on three half days a week, namely, Monday and Friday afternoons and Wednesday mornings.

Mr. Noel-Baker, Minister of Fuel and Power, said at St. Helens on Saturday last that a great deal more coal would have to come from the British mines; otherwise the country's situation would be very serious in the early future. In the next 12 months it was hoped that the use of fuel oil would be increased to 100,000 tons—equivalent to 150,000 tons of coal. There would soon be a big campaign for fuel efficiency. It was estimated that 25 mill. tons of coal could be saved in a year.

The Third Edition of 'Standard Methods for Testing Tar and its Products' is being published by the Standardisation of Tar Products Tests Committee, 166, Piccadilly, London, W.1, price £1 10s. 9d., post free, and is expected to be available towards the end of December. The new edition represents a thorough revision of the 1938 edition and of revised sections issued since that date. It also includes several tentative methods and a new section covering coal tar fuels. Pre-paid orders are now being accepted which will be executed on publication day.

South Western Re-union.—Mr. C. Holmes Hunt was the host on the occasion of the first re-union dinner of the former directors and officials of the subsidiary gas companies of the South Western Gas & Water Corporation, held recently at the Rougemont Hotel, Exeter. Major Lock, late Chairman of the Dorchester Gas Company, proposed the toast of 'South Western Friendship,' to which Mr. Holmes Hunt replied. Mr. J. M. Whittington proposed the toast of 'Absent Friends.' There was a fully representative gathering, and an enjoyable evening was spent. Amid much enthusiasm the assembled guests resolved to make the re-union dinner an annual event.

Mr. Alfred Robens, M.P., *Parliamentary Secretary to the Ministry of Fuel and Power, paid an informal visit to the Beckton gasworks and the Beckton products works of the North Thames Gas Board on November 15. He was greeted on his arrival at the works by the Chairman (Mr. Michael Milne-Watson) and members of the Board. Mr. Robens was shown the mechanical workshops, one of the horizontal retort houses, the coke ovens, and some of the extensive new work now being carried out. He then made a tour of the new welfare centre at the products works.*



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NEW WORLD

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There is a Silent Beam model to meet every condition, each model embodying the special features of the Silent Beam design—silence in burning, the characteristic Rado-Panel which gives an appearance of considerable depth in the attractively-glowing surface, a minimum of servicing attention after installation. Most models incorporate a gas governor and a three-position gas tap.

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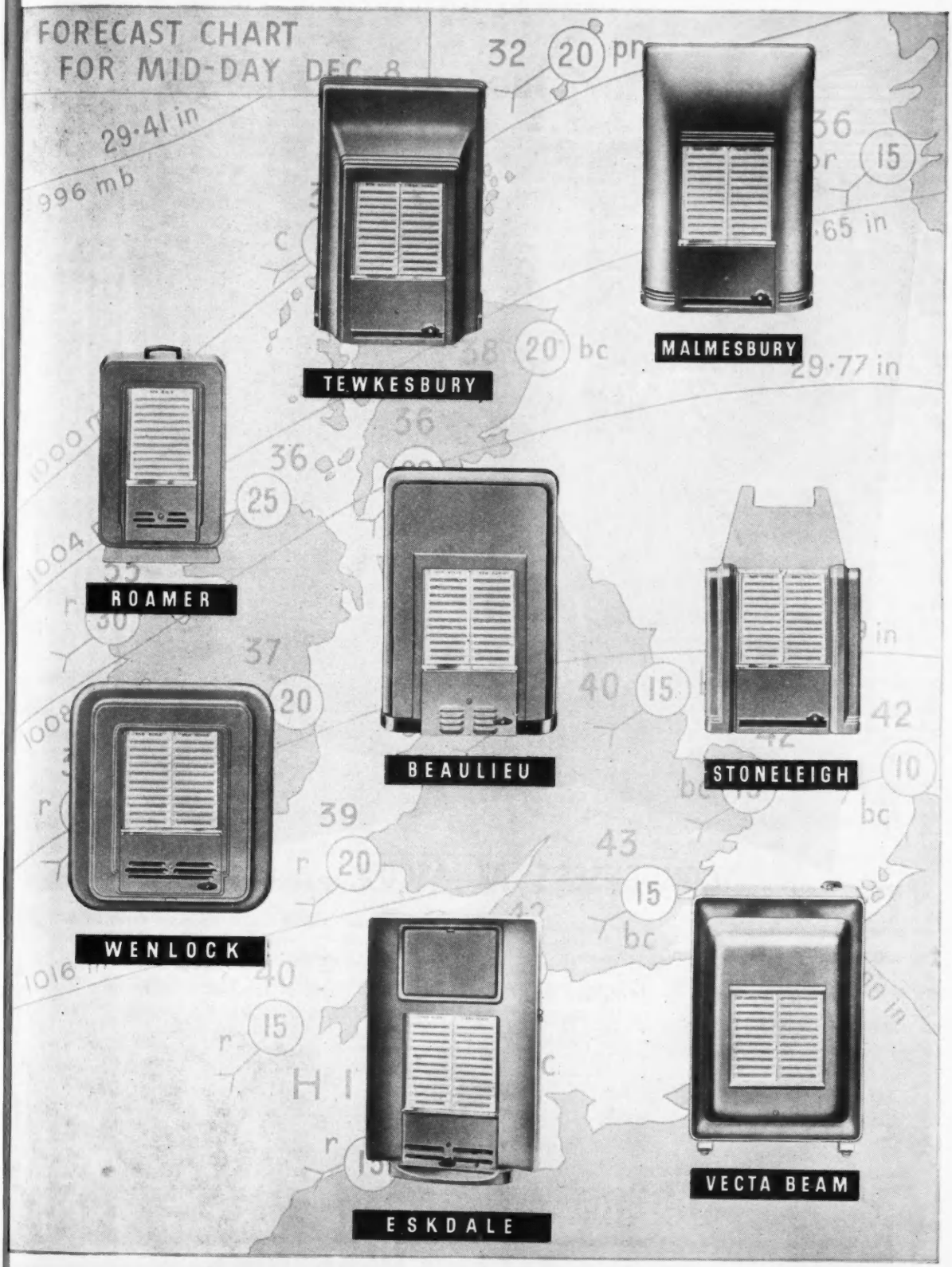
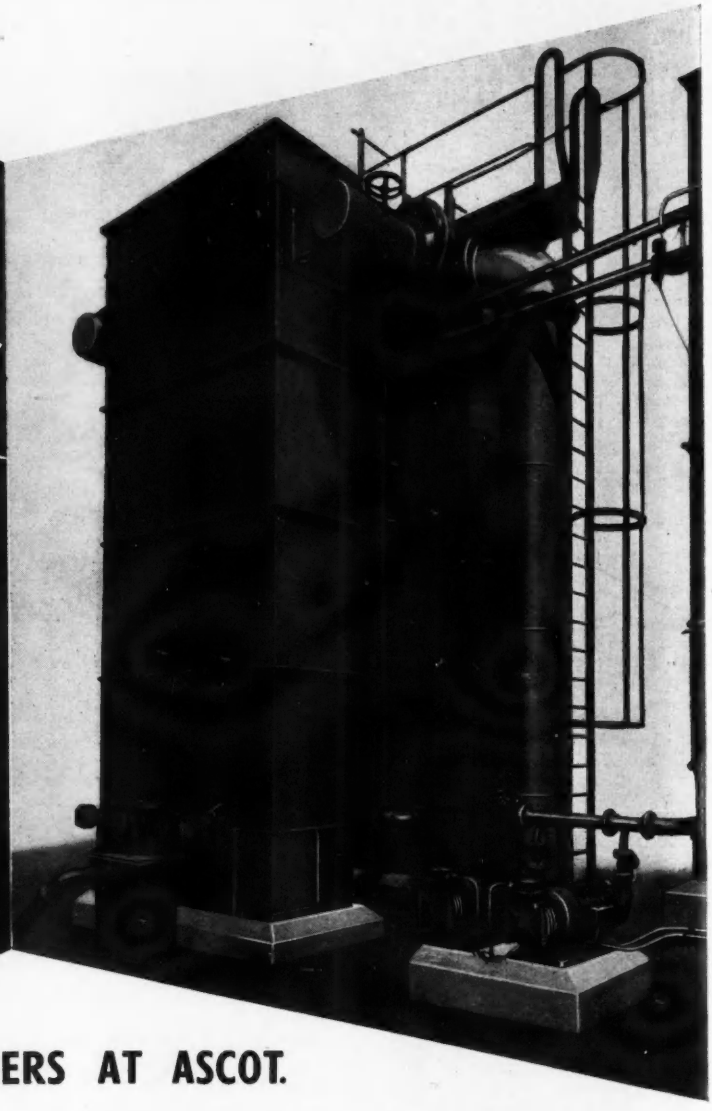


NEW WORLD NEW WORLD NEW WORLD

A blazing summer day, the crowd alive with excitement and the thrills of the game, but above all a riot of colour displaying Society's latest fashions for the glory of Ascot's race meeting.



CONDENSERS AT ASCOT.

Supporting this world-famous event is a gas service in Ascot which plays a faithful, if less eventful, part in the life of the Town. Upholding this tradition of the Gas Industry is a recent Installation of two steel vertical tube Condensers illustrated above, for the North Thames Gas Board, which, complete with forced draught water cooler, have a combined capacity of three million cu. ft. per day.

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Uniform Price Throughout North Thames Area

FOLLOWING its stated policy of 'A Uniform Product at a Uniform Price,' the North Thames Gas Board has announced certain adjustments of gas prices and the introduction of new tariffs. It is believed that this is the first board, either gas or electricity, to introduce a uniform flat rate, which has been made possible by the existence of a 'grid' covering almost the whole area of supply.

Mr. Michael Milne-Watson, Chairman of the Board, made the following statement to the North Thames Consultative Council on November 23 and indicated that the new tariffs would take effect from January 1, 1951.

In over 18 months since vesting date, notwithstanding continued rises in costs throughout this period, the North Thames Gas Board has made only two changes in price—namely, in the Commercial and Shoeburyness Districts where prices were reduced following a return to normal conditions after the war. During this time the costs of manufacture and distribution have increased by about £900,000 a year, due to increases for gas oil, railway freights, petrol, wages, and repairs and maintenance. Every effort has been made to offset these by general economies, but this is too large a sum to be wholly absorbed and in view of the necessity to see that income meets expenditure a good proportion of this £900,000 will have to be met by increasing the price of gas.

The North Thames Gas Board has taken this opportunity, the first general change in price since vesting date, to review the charges which were in force in the 12 areas of supply. This has been a formidable task as there were in fact no less than 275 different rates. It became immediately apparent that these discrepancies in price could in no way be justified now that the 12 undertakings have been brought together by nationalisation to form the North Thames Gas Board. The North Thames area is, geographically, founded on the old Gas Light and Coke Company grid which is being extended to every manufacturing station. As the gas can be pumped to and from anywhere in the area between Windsor or High Wycombe and Southend it is impossible for anyone to say which manufacturing station has made the gas that he is burning at any given moment.

Development of the gas grid enables the Board to complete its policy: 'A uniform product at a uniform price.' To this end three steps have already been taken :—

(i) Reductions in price in the two Districts already mentioned—Commercial and Shoeburyness.

(ii) The standardisation of the calorific value of the gas at 500 B.Th.U. throughout the whole area.

(iii) Central control of gas manufacture which enables a balance to be maintained between each manufacturing station and gives maximum flexibility and economy of working.

To these should possibly be added, though not directly connected with gas prices, uniformity in types of and charges for purchase and hire of all gas apparatus.

It is now intended to take two further steps :

(i) To fix a common flat rate price of gas for the whole North Thames area; and

(ii) To introduce a number of standard alternative rates available to meet the varying needs of consumers throughout the area.

The flat rate price of gas will be 16.1d. per therm. For some 80% of the Board's consumers this will mean an increase of ½d. per therm, but in districts where the price is now above 16.1d. it will come down to that figure. In four Districts—Lea Bridge, Chertsey, and Slough and Uxbridge, the price will be increased by more than ½d. per therm. On the basis of current revenue and estimates of gas sales this will be sufficient to recover £560,000 out of the £900,000 a year required by the increased costs—leaving a balance of £340,000 to be absorbed by existing revenue.

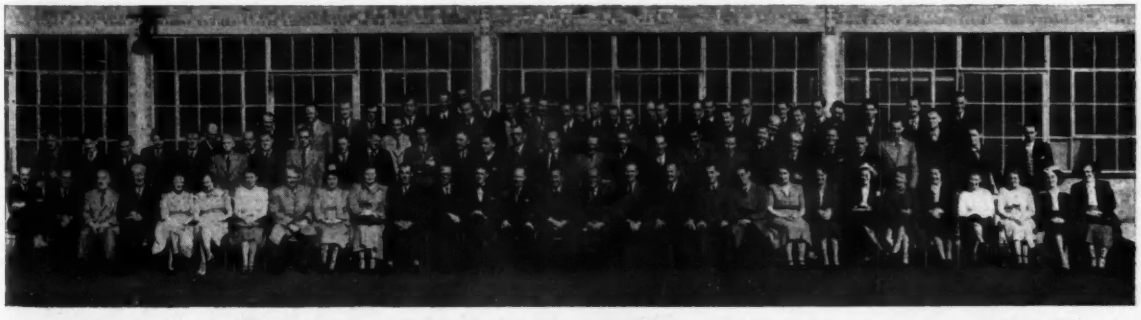
The domestic two-part rate will have a quarterly standing charge of 22s. 9d. with all gas at 12.1d. per therm and no meter rent.

'I believe we are the first Board, either gas or electricity,' said Mr. Michael Milne-Watson, 'to introduce a uniform flat rate, and I should like to emphasise that it has been possible to do so because we have a grid covering almost all our area of supply. The use of this grid will enable us to concentrate our base load gas manufacture on those stations where costs are lowest. In this way we shall do our best to counteract the trend of increasing prices which seems to be so inevitable today. We are confident that this uniform price, reducing as it does the price of gas in those areas where it has been as high as 18.2d. per therm, will be commercially beneficial and will be in line with the Government's plans for relieving congestion in Central London and building new towns outside.'

DUBLIN GAS FITTERS VISIT NEASDEN

SEVENTY-SIX members of the Dublin Gas Fitters' Social Club recently visited the Neasden works of Ascot Gas Water Heaters, Ltd. The party arrived in London on a Saturday night, and spent Sunday sightseeing. On Monday they were entertained to a reception and luncheon at a hotel near the Ascot works, and later made a tour of the factory. On completion of this, the party were given tea in the works canteen, where they were afforded an opportunity of inspecting a display of the complete range of Ascot water heaters, together with a display which featured the educational and service facilities which the company affords to the gas industry and allied trades.

The visit was made under the auspices of the Alliance and Dublin Consumers Gas Company, and a vote of thanks to Ascots was moved by Mr. Clarke, who was deputising for the President of the Club. Mr. R. Barry, Chairman of the Dublin Gas Fitters' Social Club, also voiced the appreciation of the visitors. Mr. R. W. Byford, Service Manager, and Mr. H. Weight, Ascot representative in Ireland, replied on behalf of Ascots.



CONSULTATIVE COUNCILS IN SESSION

West Midlands Report Progress

THE West Midlands Consultative Council met at Birmingham on November 13, under the chairmanship of Mr. W. H. Malcolm.

The Chairman said a local committee had drawn attention to gas fires being dangerous unless guarded and had asked that it should be taken up with the Society of British Gas Industries. Action had also been taken by the National Federation of Women's Institutes. It was intimated that the authorities were fully alive to this problem which had received a great deal of attention. Guards to fires rarely sold, although freely offered and were now to be sold as an integral part of the fire.

The Board had authorised the expenditure of approximately £20,000 for the replacement of defective mains at Bromsgrove, in addition to £6,000 on maintenance. The Ministry of Fuel and Power had authorised a bulk supply from Redditch to Bromsgrove and the closure of the Bromsgrove manufacturing plant, which was in a most unsatisfactory condition and uneconomical to run. It would, however, take two years to get the pipes and another year to lay them. Another problem was the disposal of effluent from the existing gasworks and until this had been done no progress could be made.

Mr. G. le B. Diamond presented a report on the operations of the Board for six months to October 1.

Total gas made and purchased during the six months:

	Cu.ft.
This year	30,054,839,000
Last year	28,062,970,000
Increase	7.1%
Twelve months ended October 1, 1950 ...	65,631,981,000
Twelve months ended September 30, 1949	62,561,609,000
Increase	4.9%

These increases are proportionately larger than those of other Area Boards and reflect the intensity of the production drive in the West Midlands. The demand for gas in many places is fast outstripping the productive capacity of the plant and the resources of labour and material for the construction of new plant.

The Consultative Council has already been informed that the Board has on order new gasmaking plant to a total daily capacity of 90 mill. cu.ft. and several new gasholders with a capacity of 24 mill. cu.ft. The cost of this large programme is of the order of £13 mill., but it is unlikely that this large constructional programme can be completed for many years. It thus became necessary to issue a warning through the Regional Board for Industry that the utmost economy and the highest efficiency in the usage of gas in the factories is necessary to avoid a breakdown. In some industrial towns in the Black Country the output of gas has increased during the period under review by as much as 30%.

The coal carbonised for the six months' period amounted to 1,365,400 tons, an increase of 5.6% over the corresponding period last year. Earlier in the year, on the instructions of the Minister of Fuel and Power, the manufacture of carburetted water gas was stepped up in order to save coal. In fulfilling the Minister's request 20% more C.W.G. has been made, which has brought about a saving of 46,000 tons of coal. The cost, however, has been heavy, for the increased usage of gas oil and the additional price brought about by the devaluation of sterling amounted to £10,000. Concurrently, a large tonnage of gas coke was taken off the market in order to produce the additional C.W.G. and this has had a material effect on the amount of coke available for sale during the coming winter. On October 1 the stocks of coke amounted to 46,000 tons, against 103,000 tons at the corresponding date last year. This situation has given rise to some anxiety, and the Board has made arrangements to purchase 1,000 tons of coke a week from the North Western Board to help make good the deficiency. The sales of coke this year show an increase of 15% over the corresponding period of last year.

With reference to the re-construction of Walsall gasworks, Ald. J. H. Lewis said steps had been taken to get plant from Romford to accelerate the work, but he understood it was held up through the absence of approval from the Ministry of Town and Country Planning.

Mr. Diamond said the matter was receiving urgent attention but the whole business was very complex and there had been a variety of difficulties.

A resolution was passed expressing concern at the delay which occurred.

On the question of coke Mr. Diamond said there was a very grave crisis in the Midlands. There had been a shortage of coal in the Midlands for gas-making purposes, and they had to make the maximum amount of water gas. The result was they were about 22,000 tons short of coke. There was an excess in the north western area and he took the trouble to go personally and obtained a thousand tons a week for 12 weeks which was all they would let him have. He had since got another thousand tons a week, but he could not say how long that would go on. On the subject of street lighting he said the policy of the Board was that it must be sold at an economic figure. It was considered that lighting should not be subsidised by other consumers of gas. Unless street lighting was an economic proposition they wanted the gas for more important uses in the home and in the factory.

Wales Price Structure Review

THE Wales Consultative Council on November 17 set up a sub-committee which will discuss with the Wales Gas Board the review of the new price structure which the Board is to undertake with particular attention to changes in industrial charges.

Raising the question of the review, Mr. W. Allman (British Nylon Spinners, Ltd.) said that as these industrial changes were involved he had suggested that the Board might invite the Federation of British Industries to discuss the matter with them. The Board had replied that it considered if this action was taken it would be usurping the powers of the Consultative Council; it would be preferable if a sub-committee were formed within the Council to take up the question with the Board.

Councillor J. W. Morgan (Builth Wells) said that the Council should consider the new price structure a question of great importance. The future of the industry in the country largely depended upon it. Present-day cost of labour and fuel was proving a heavy burden and he could speak for one section of the industries—bakery, where the cost of gas for ovens was causing a great deal of concern.

He recalled a personal experience when he was quoted a price for a set of new ovens. He thought the price reasonable and placed his order, but while he was awaiting delivery over a period of two and a half years the price of gas went up on two occasions. Ultimately, he had to cancel his order with some reluctance and go over to solid fuel. There were similar cases all over the country involving many large consumers 'who would be welcomed with open arms by gas undertakings,' he added.

Alderman R. S. Tyack (Newport) agreed with the establishing of a sub-committee to include the industrialists sitting on the Council, and that they should go with the F.B.I. to the Board but it was up to the Council to take the initiative. When viewpoints were expressed that the question required time for careful study Alderman Tyack pointed out that by the time the Council would normally meet again they would have to accept the matter as a *fait accompli*.

Mr. S. Jones (Blackwood) agreed on this latter point, but argued that, while the F.B.I. might obtain consideration in the new price structure which would prove favourable to them, it might affect differently other people whom the Consultative Council represented.

A sub-committee was finally elected as follows: Alderman G. Hamer, Miss D. G. Miskin, Dr. W. A. Hayward, Mr. W. Allman, Mr. W. Nash, Alderman R. S. Tyack, and Councillor J. W. Morgan.

When the Council dealt with matters

arising from the local committees, Mr. T. O. Jones, acting Secretary, spoke of the South Wales committees who had invited group managers to explain plans and aims of the gas industry.

Alderman Edward Williams (Wrexham) said that in local committees awkward problems might often arise purely through lack of knowledge whereas if a manager were present he could solve many of their difficulties.

Another member, however, said that this policy might not always be practicable, for example, in his own area there were almost as many managers as there were committee members. Mr. T. O. Jones submitted that in a case such as this it would be advisable to make the managers' group chairman their spokesman.

Mrs. H. Harry (Harlech) said that in Anglesey the Gas Board was encouraging people to buy gas equipment when the pressure in the area was not sufficient for appliances already in use. The complaint was referred to the Board.

A request from the Rhyl local committee for copies of the Gas Act for distribution to all members brought a suggestion from Mrs. Harry that a synopsis might be produced embracing the relevant points for the committee's usage. Alderman Tyack doubted if the Gas Act would, in fact, be of use to them because 99% of it was technical. It was decided to take no action.

Church Heating by Gas

A MEETING of the Eastern Consultative Council was held on November 20, when the chairman, Alderman R. Turner, J.P., reported on correspondence with the Rev. C. Henslow, of Leighton Buzzard, who had suggested that all gas fires should have flat tops instead of rounded or pointed in order that surplus heat which at present passed wastefully up the chimney could be utilised for boiling a kettle. The writer mentioned that he had raised the question on previous occasions and had been told that 'the designers were experts,' but he persisted in pressing for something to be done.

The **Chairman** said he had brought the matter to the notice of the Board, whose members remained completely unconvinced. The Council agreed that no further action was called for.

A letter from the Felixstowe Urban District Council expressed concern at a recent increase in the price of gas to 18d. per therm, against the 15.4d. charged 12 miles away at Ipswich.

The **Chairman** said the Board had discussed the matter and the answer was that there had been no change in the differential between Ipswich and Felixstowe. The Board saw no justification for reducing the differential but was in the process of a full investigation into the price structure throughout the area.

It was argued that under nationalisation the time must arrive when there would be uniform charges, but the **Chairman** said the possibility at present remained very remote. They must first strive to establish a uniform basis of charge.

A request for a special price for gas consumed in a hot air heating system installed in the church of St. Michael-at-Bowes was reported to have been received from Mr. G. M. Moore, of Palmers Green. A coke-burning hot air system had broken down and it had been decided to replace it by a gas heated system, for which it had been anticipated that the Board would concede a central heating rate. On application to the local offices of the Board, however, Mr. Moore had been informed that while special rates were applicable to gas hot water systems they were not granted in the case of gas hot air systems.

The **Chairman** said the matter had been submitted to the Board whose answer was that the plant did not fall within the category of a thermal storage water system. The hot air system was a 'spot load' which was started up immediately before the heating was required and closed down immediately after service. In his view the Board was right in its decision. The only justification for a preferential tariff was a demand extending over the whole 24 hours.

A member suggested that some consideration might be given to the fact that it was an off-peak load, but the Chairman pointed out that the Sunday morning heating period would coincide almost exactly with the weekly peak cooking load.

The Council endorsed the ruling of the Board.

Discussion arose on the question of the admission of the Press to the meetings of the district committees. Of the five committees, three were not in favour of admitting the Press while the other two thought it would be advantageous. Arguments were advanced on both sides, emphasis being laid on the statement that if confidential matters arose while the Press were present the reporters could be relied upon to respect any request for the withholding of reference to such matters.

The **Chairman** advised the Council that existing standing orders precluded the presence of the Press and that any reversal of the Council's decision would involve the submission of amended standing orders to the Minister of Fuel and Power. He thought it was unlikely that approval to such a change would be given unless and until similar requests came from the other areas.

Chairmen of the district committees not in favour of open meetings pointed out that they could not vote on any change without first consulting their committees. A resolution in favour of admitting the Press was, however, put to the vote and carried by 11—6, and it was promised that it would be submitted to the Minister.

The **Chairman** reported informally on a second meeting of the Chairmen of the Consultative Councils with the Minister of Fuel and Power. One of the principal matters discussed was the question of a standard fixing charge for gas appliances. The standard charge was opposed and there was also criticism of a wide variation in the prices of cookers in different areas. Both matters would, said the **Chairman,** be discussed again at the next meeting. He hoped also to have something to tell the Council at a later meeting on the question of contributions towards installation costs for new houses.

Arising out of reports of meetings of the Tottenham, Ipswich, and Cambridge district committees, the **Chairman** said there had been criticism of the manner in which the Board had announced increases in the price of gas which took effect as from the September meter readings. The Deputy Chairman of the Board, Mr. Dyde, had given a full explanation of the new prices at a meeting of the Consultative Council in July, and it was felt that if all the details were repeated when formal notice was given there might be some misunderstanding; the notices therefore gave bare intimation of the increases and announced that details were available at the Board's offices.

A report of the address on Tariffs, by Mr. R. H. Epps, Secretary of the Eastern Gas Board, will be published later.

Gas for 1,900 Glasgow Houses

EXPENDITURE of £51,872 on the construction of oxide purification plant at Motherwell, approved by the Scottish Gas Board, was criticised by Ex-Provost T. Wilson, Motherwell, at a meeting of the Scottish Gas Consultative Council in Edinburgh on November 8. Erection of the plant, he said, would mean that there would be a purifier on either side of two dwelling houses within the gasworks. He questioned the economic and technical wisdom shown in the siting of the plant.

Mrs. C. Hill (Elgin) said housewives could not obtain new gas cookers on simple hire but had to buy them. Most people, she said, would prefer to hire their cookers. It was agreed to place the matter before the Board.

Gas projects in Glasgow and the West Division totalling £58,168 were approved by the council. Mains and services to Glasgow housing schemes comprise £19,288 of that total. They include: Barmulloch—212 houses; Blairdardie—480 houses; Merrylea—620 houses; and Milton (fourth development) — 588 houses. A sum of £11,577 is entered against Dalmarnock gasworks for resheeting roof over purifiers and re-building the upper part of a vertical retort bench.

The Council also approved various projects in Lanarkshire at an estimated cost of £2,700. Also costing £2,700 is the scheme linking Hamilton works with the Lanark district high-pressure main.

Gas for Pipe Manufacture

ON November 9 the Midland Junior Gas Association visited the Bromford Tube Works of Stewarts & Lloyds, Ltd., Birmingham. The tour of the shops and foundries was preceded by an interesting illustrated lecture. This enabled the visitors to grasp in advance details of what they later inspected *in situ*.

The hearty thanks of the visitors was expressed by Mr. J. Palser (President of the Association), who said how grateful they were to Mr. Foster, Works Manager, to Mr. Bonney, Chief Engineer, to Mr. Crellin, of the Research and Technical Department, and to Mr. Topping, Training Officer, for their help in contributing to the complete success of the occasion.

During the tour of the works inspection was made of a furnace built by Priest Furnaces, Ltd., Middlesborough, to heat steel in the form of round ingots up to 21¼ in. diameter, from cold to 1,250°C. at the rate of 18 tons per hour. It is believed to be the largest furnace of its type using town gas as fuel. Over 139 ft. in length and 16 ft. wide (over brickwork), the furnace accommodates 17 bogies each 8 ft. long and 9 ft. wide. Each bogie is capable of carrying a 15 ton load stacked in two tiers.

Group taken at the visit of members of the Midland Junior Gas Association to the Bromford Tube Works of Stewarts and Lloyds, Ltd. Left to right: Mr. Topping (Chief Training Officer, Bromford Tube Co.); Mr. Bonnie (Chief Engineer); Mr. W. H. Foster (Works Manager); Mr. J. Palser (President M.J.G.A.); Mr. R. B. Watkins (Session Vice-President); Mr. G. L. Moreton; Mr. Crelling (Research Department); Mr. S. Brockbank (Past President).

The firing zone is 77 ft. 6 in. in length and has 33 vertical firing ports at each side, the gas and air supply to each being capable of independent adjustment in order to give the desired type of flame in the furnace.

The combustion products pass down the furnace through the pre-heat zone, which is 62 ft. in length and is fitted with three sets of exhaust ports sited in the side walls. The degree of pre-heat imparted to the oncoming stock can be controlled by suitable adjustment to the exhaust port dampers.

After leaving the furnace the waste gases pass through a Newton needle-type recuperator, pre-heating the combustion air to 350°C. The waste gases are then passed to the stack via a 35 ft. dia. induced draught fan with a capacity of 30,000 cu.ft./min. at a temperature up to 450°C. The entire furnace structure and bogies, with the exception of the arch over the combustion zone, is insulated.

Gas is supplied to the main stop valve at a pressure of 4 in. W.G. and is metered at this point. The total gas supply to the furnace is adjusted by a remote control valve operated from the instrument panel. A similar control governs the air inlet to the combustion air fan. The individual gas valves and air slides are adjusted manually.

Furnace pressure is automatically controlled by an Askania regulator operating a butterfly valve at the inlet to the induced draught fan.

Employees of the South Western Gas Board worked by floodlight from boats on the night of November 21 to restore the gas supply to Bovey Tracey and Heathfield, where 600 consumers had been cut off for 10 hours through flood waters sweeping away 90 ft. of the canal bank near Newton Abbot, and with it part of the high pressure main.

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in the next issue of GAS SERVICE —

will be found —

in addition to regular features and serial articles, news and views and personal paragraphs

The importance of good publicity to the gas industry has never been appreciated more fully than since nationalisation. Hence the topical significance of the exclusive articles appearing in *Gas Service* on publicity and display units in the industry. The December issue spotlights the backroom boys of the North Thames Gas Board in a fully illustrated article describing the individual approach of this highly skilled team.

* * *

Is there a large potential load in the rural areas? Is there a future for gas in agriculture? *Gas Service* thinks there is, and that it should be cultivated before it is too late. The matter is dealt with in a thought-provoking editorial which stresses the need for a new kind of salesman, one who can really understand the needs of the rural consumer.

The catering load is one of the industry's dearest and proudest possessions. A brief history of the catering industry, an examination of the 100 mill. therms it consumes each year, and a glance at the future, are all contained in a selected extract from a recent paper by A. S. Williams to the London Juniors.

* * *

What is the future of the gas salesmen's circles? Under very official patronage they may lose their former friendliness and freedom. The matter is discussed at some length, and reports are given of new South Western and North Western circles.

There are few local exhibitions at which Mr. Therm is not represented. For example, at a recent Cambridge show the gas stand received 2,000 enquiries and took orders exceeding £3,000. This and three other gas stands—at Bedford, South Norwood, and Bury St. Edmunds —are illustrated and described in December *Service*.

* * *

Coke—its manufacture, quality, distribution, and sale—is a matter of deep concern today. In dealing with the future for coke, editorial comments are based on a number of recent papers on the subject.

This number will reach subscribers early in December

Published from the Offices of the *Gas Journal*, price 9d

Gas in France

Our Own Correspondent extracts from the French Technical Press a selection of topics concerning gas developments across the Channel.

THE Editor of the *Journal des Usines à Gaz* (September), anticipating the appearance of the statistics for the year 1949 shortly to be issued by Gaz de France, notes that the annual rise in gas sales has settled down to what amounts to 4%. One explanation of this result is that the fuel market recovered in 1949 a liberty which it had not known for the past 10 years. Competition has returned, and with it the urgent necessity for a coherent and vigorous commercial policy in the gas industry. Looking abroad he notes the insistence in Great Britain, on gas service and on the maintenance of appliances. This he contrasts with the American policy of neglecting maintenance, preferring to replace appliances after some 10 years of use. However that may be, Gaz de France recognises the opportunity afforded on the one hand by the release of gas prices from the restrictions under which they have suffered in recent years and on the other by the renewal of production plant, placing it in a position to respond nearly everywhere to the demands upon it.

Propane

Alternatives to coal gas engage a good deal of attention in France. The cost of coal gas production in the small works has become prohibitive. These works may in some instances be replaced by supplies from larger centres of production. When this solution is itself too costly, the use of propane, a residual of petroleum refinery, offers a simple and economic means of maintaining gas supply. M. P. Albrieux, Chief Engineer to the Direction of Equipment of Gaz de France (Transport and Distribution Services) describes two installations, one at Nangis (Seine-et-Marne), near Paris, where a mixture of propane and air is distributed, and the other at Saint Hippolyte du Fort (Gard), near Marseilles, where pure propane is used.

The pure propane is delivered by the petroleum refineries in tank wagons or road-borne containers liquified under pressure. Propane in the state of vapour at atmospheric pressure has a density of 1.5 and a calorific value of about 24,000 cal/m³ (2,500 B.Th.U/cu.ft.); its complete combustion requires about 25 volumes of air. Special burners are necessary for its use. It is distributed at from 300 to 400 mm. water pressure (12 to 16 in.). In these conditions a given quantity of potential heat is transmitted in a pipe 2.5 times smaller than that required by town gas. On the other hand leakage is much greater with propane than with town gas. In spite of the greater density of propane, but by reason of its low viscosity, its high calorific value, and the high pressure at which it is distributed, a given orifice allows 11 times more calories in propane to escape than in town gas. Propane hardens most greases, especially those of mineral origin. It destroys natural rubber, rendering it friable. Mains and services for propane must therefore be particularly tight and constructed with appropriate materials. Because of the high calorific value of propane the volumes consumed are small. For this reason and on account of the high pressure of distridistribution special dry meters registering small volumes are used.

Propane mixed with air—without forming an explosive mixture—gives a combustible gas with calorific values which may extend over a wide range. The mixture containing 2.7 volumes of air per volume of propane with a calorific value of 6,500 cal/m³ (680 B.Th.U./cu.ft.) is usual. The density of this mixture is 1.4. It can be used in most ordinary town gas burners, but means of regulation is useful. The normal pressure of distribution is the same as for town gas and the diameters of mains and services are also similar. Losses of calories by leakage are about the same as with town gas. This mixture has less effect upon lubricants and rubber than pure propane. At the same time it is well to use special lubricants for valves, and rubber joints should be replaced by 'anti-benzole' joints, or better still by joints of the special synthetic rubber used with pure propane. Ordinary meters, dry or oil-sealed, may be used, but it is preferable to use dry meters with the special membrane resistant to propane. Wet meters are liable to rapid destruction.

Situated south-east from Paris, Nangis has a population of 2,850. In 1949 the gasworks produced 275,000 m³ (9¾ mill. cu.ft.) of gas at 4,200 cal. (430 B.Th.U.). It had reached the limit of wear and tear. Only the gasholder was in sufficiently good condition to remain in service. The distribution system needed extensive renewal. It was not economical to extend mains from the Parisian region. It was decided to abandon gas production and to replace it by the mixture of propane and air. The propane is received from a petroleum refinery near Rouen in containers. The apparatus of mixing and emission is described. The distribution system was reconstructed. Consumers' appliances were systematically inspected and adjusted—a proceeding which, necessitating numerous contacts with consumers, proved of great value from the sales point of view.

This little town, of exactly the same population as Nangis, is situated at the exit of an arid gorge from the chalk hills of the Cevennes above Montpelier. The gasworks was old and needed complete renewal. In 1948 the 160 remaining consumers had taken 22,000 m³ (780,000 cu.ft.), a volume less than that of the leakages. The works necessary to restore the distribution system could not be contemplated. No supply by feeder main from an outside source was practicable. It was, however, possible that ultimately natural gas might be available if borings in the neighbourhood proved successful. For the immediate future it was necessary to adopt a gas which could be produced in simple apparatus and distributed in a system of economic construction. Pure propane offered a suitable solution.

The gas is received in containers or tank wagons from the refinery at L'Avéra near Marseilles. The gas leaves the gasworks at a pressure of 350 mm. water gauge (say 14 in.). The distribution system was completely relaid, perfectly tight, and with diameters ranging from 80 to 40 mm. To reduce to the minimum the cost of mainlaying in the very rocky sub-soil the pipes are laid very near to the surface, varying from 40 to 70 cm. They are covered with asphalted jute, and the system is also protected against electrolytic corrosion. Special arrangements are provided to control leakage. All consumers' appliances were replaced free of charge to them by apparatus specially designed for the use of pure propane.

Gas and Sardines

In the French sardine industry until recent years the most ancient methods of manufacture have been handed down from father to son. But in early 1949 the very active South Western Division of Gaz de France undertook the modernisation of the processes of drying and cooking in the sardine industry of the Côte Basque. Development since 1945 has been extremely rapid. An account is given of the first experiments carried out and the results obtained recently, on an industrial scale, with the help of infra-red radiation with gas burners.

The sardines must be treated as soon as possible after landing. At whatever hour of the night or day the boats arrive in port the work-women are summoned by siren to eviscerate and behead the fish, plunge them for 5 minutes in a brine bath, and then wash them in cold water. This haste is necessary because the viscera ferment very quickly preventing the preservation of the entire sardine. Cooking is effected either by steam or by hot oil. If by steam the order of the operations is: Preparation of the fish, cooking, drying, packing, sterilisation. If the cooking is done by immersion in a

bath of hot oil, this is preceded by drying. In these conditions a portion of the liquid contained initially in the sardine is replaced by the oil; the flavour of the sardine cooked in oil is thus different from that of the sardine cooked by steam. The steam cooking process appeared to lend itself best to a change. The fish, after preparation, are placed side by side in a galvanised wire basket containing 2 kg. of fish. These baskets are placed in a stove heated by a current of live steam for from 5 to 15 minutes. The tissues become impregnated with water, to expel which the baskets are placed in a long tunnel through which a strong current of air at 40°C. is passed. This drying operation lasts an hour and a half and it is costly. After drying the sardines are placed in the well-known tins and re-covered with oil. The boxes are sterilised at 110°C.

The first step was to substitute for the two operations of cooking and drying a single operation using a gas infra-red drier. Tests at the laboratory scale were encouraging and steps were taken to design and put into operation two types of continuous oven of industrial scale. The results show that further adjustments are necessary; it remains to determine in practice and for each type of sardine the optimum regulation of temperature and time of treatment to obtain the best result.

Third Party Risks in the Gas Industry

The same issue of the French Journal contains a report by M. R. le Paslier, Chief of the Service of Prevention and Security in Gaz de France. 'The prevention of accidents of which third parties, and more particularly gas consumers, may be the victims is one of the aspects by no means least among the problems of security in the gas industry.' Accidents and their prevention involve problems of technique and of human nature of which some are interdependent and cannot be dissociated. Problems of technique are covered by regulations and codes. In the human factor enter physical causes, due to failure provoked by ill-health, fatigue, age, and psychological causes comprising inattention, imprudence, negligence, carelessness, panic, etc.; in addition a special place must be assigned to *ignorance*, which can be effectively combated by active and constant propaganda.

The establishment of statistics, studies of the types of accident, investigation of the causes, frequency, gravity—categories of subjects most liable to accident—are all of interest to the technician in this subject. Since January 1, 1949, the Service of Prevention and Security of Gaz de France has received from the undertakings under its control, and for every accident attributed to gas, whether it related to persons or property, a detailed report. Among other classifications is that between accidents imputable to the consumer and those arising out of the supply and distribution of gas.

The statistics for the year 1949 are examined in detail. The number of domestic consumers in France is about 5 mill. There are in service approximately 200,000 water heaters, 380,000 'bath heaters', 280,000 'radiators' (probably including gas fires—Trans.), 35,000 central heating boilers, 6,500 gas heating installations in blocks of flats, etc., and 14,000 refrigerators. In addition there are 30,000 commercial kitchens equipped with gas appliances, 10,000 cooked meat establishments, pastry cooks, and bakeries, and about 24,000 other installations under the heading 'commercial consumers' (including 7,500 laundries, dryers, and hairdressers). Accidents notified were 2,096 distributed between 867 asphyxiations, 1,499 poisonings, 120 fires or explosions. These figures include 998 suicides or attempted suicides. Responsibility is divided between consumer and supplier in the proportion 78.5% to the consumer, 6.2% to suppliers outside the gas industry, 15.3% to the industry. In the last named category only 12 fatal accidents out of 5 mill. consumers are imputable to the gas supply itself.

Active Propaganda

While these figures are regarded as satisfactory it is stressed that it is in the interests of the gas industry to reduce them still further. Out of the 78% of accidents attributed to the consumer himself it is estimated that 68% result from causes physical or psychological and 10% from ignorance. It is therefore towards a better education of the consumer by way of active propaganda that effort should be directed. There is every reason to intensify the action already being taken by the Ste. Technique, the Society for the Development of the Gas Industry, and the gas undertakings themselves, not only in the diffusion of information but in the perfection of the safety of appliances, to increase the confidence of the public in this great national service.

In October, 1949, a delegation from Gaz de France visited the Ruhr and the Sarre to collect information relative to the treatment under pressure of gas for distribution over long distances. These technicians arrived at certain conclusions which are summarised in the *Journal des Usines à Gaz*, September issue. The big distributors in these regions have been led by experience gradually to tighten their specifications of surplus gas purchased from coke oven plants. Generally, for gas to be distributed under a maximum absolute pressure of P atmospheres the most severe of the specifications limit naphthalene content to 5/P grammes per 100 m^3 and dewpoint to not lower than 5°C. at pressure P, the gas being also debenzolised and completely free from ammonia, sulphuretted hydrogen, and (mostly) cyanide compounds. Limitations of oxides of nitrogen and bodies giving rise to gum are also usual. German technicians are all agreed upon the harmful effect of water condensing in mains under pressure and containing these deleterious compounds, often highly concentrated in this water though existing only in traces in the purified gas.

Coke oven operators have reacted differently towards these requirements according as their plants are existing and in good condition or were requiring complete reconstruction. In the former case the gas, after normal purification, eliminating tar, ammonia, benzole (by oil washing which reduces naphthalene to a negligible content) and hydrogen sulphide. Gas thus treated comes from the compressors at 120° or 150°C. Its abrupt cooling to atmospheric temperature leads to the deposition of water and naphthalene, resulting, if conducted without precautions, in deposits of solid naphthalene in condenser tubes. It is, however, necessary that the gas should be completely cooled to eliminate water and naphthalene before transmission.

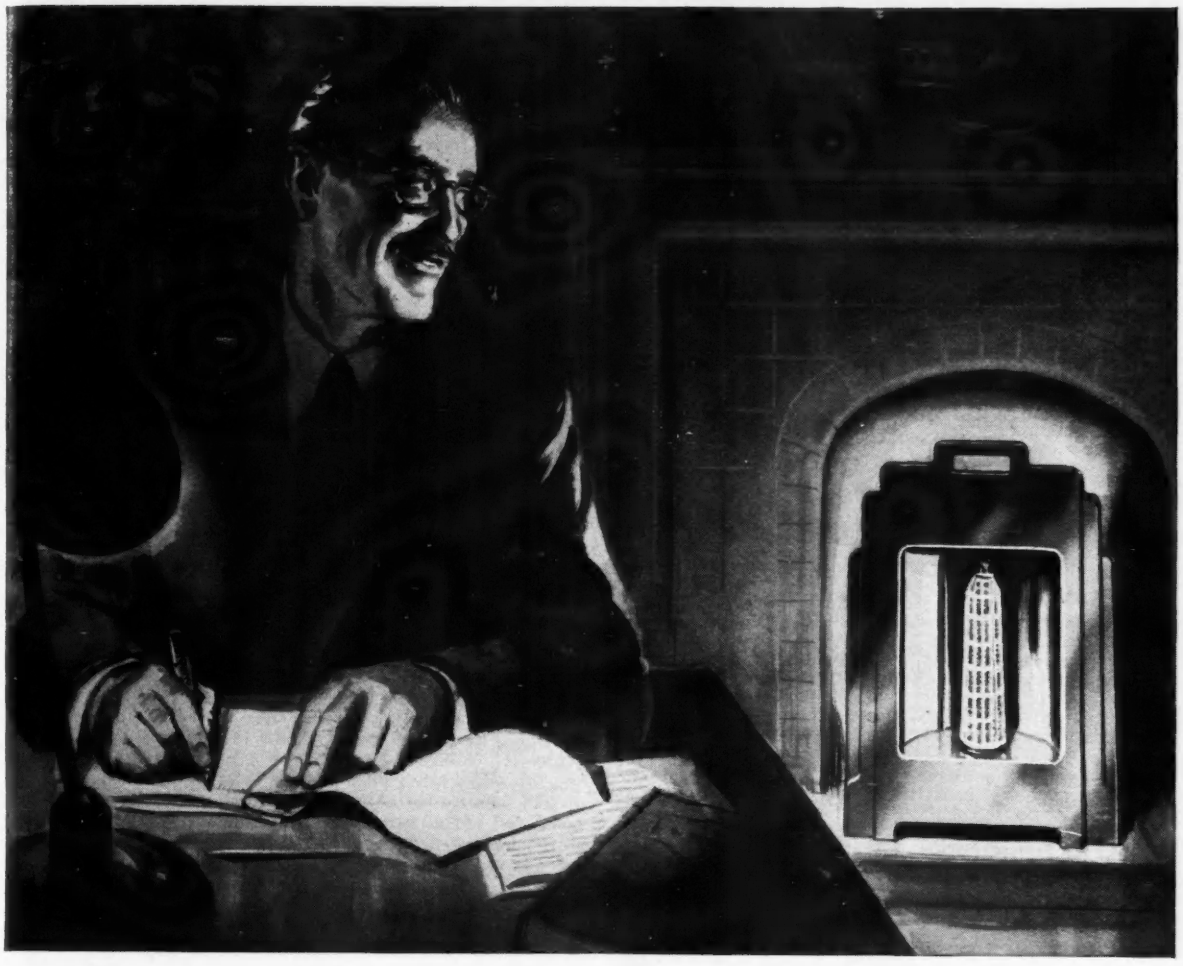
Two processes are in use. Cooling and washing in two stages is that of Koppers or Bischoff. The stages are, partial cooling of the compressed gas at a temperature slightly above that of the condensation of naphthalene (about 35°C), first washing in anthracene oil under pressure lowering the naphthalene content, which permits a second cooling under pressure to the lowest temperature obtainable by the use of the water available (15° to 20°C.), followed by a second washing in anthracene oil still under pressure eliminating practically all the naphthalene. Then, to lower the dewpoint to something just over 5°C. at the pressure of transmission, recourse is had to the standard process of washing with a concentrated solution of calcium chloride, or to refrigeration.

The Otto Process

In the second process, that of Otto, a solvent of naphthalene is introduced into the gas before compression so that the naphthalene is deposited in liquid solution at the outlet of the cooler. The solvent is generally tetraline or heavy benzole which vaporises in the gas at the high temperature resulting from compression. The cooling is mostly effected at just over 5°C. with very cold water obtained by heat exchange in an ammonia freezing circuit. Gas is thus obtained dry and naphthalene-free in the required conditions.

In the most modern plants most of the purification is carried out after compression—that is, under pressure—with a view to reducing the size and cost of the apparatus and to increasing the efficiency of the washings and other reactions. The fraction of the gas intended for transmission under pressure is taken out of the main stream after the ammonia washers and before debenzolisation. The treatment of the gas after compression is described as 'simple and elegant.' The hot gas coming from the compressors contains the water, naphthalene, and benzole (not yet removed). It is cooled to 20°C. in water cooled tubular condensers under a pressure of at least 8 atm.; the water, naphthalene, and sufficient of the benzole to dissolve it, here condense so that the major portion of the naphthalene is eliminated. This primary cooling is followed by a further cooling to 5°C. (with water cooled in an ammonia circuit) and by debenzolisation in oil. This second cooling produces condensation of a liquid mixture of solvent and naphthalene which is thus completely removed from the gas. The debenzolisation which immediately follows this cooling is greatly facilitated by the joint influence of pressure, low temperature, and the absence of naphthalene. The final result is a gas perfectly debenzolised and de-naphthalinated which is also perfectly dry under the necessary conditions (saturation at 5°C. plus at the pressure of transmission). All that remains is to remove the sulphuretted hydrogen in dry purifiers (also, presumably, under pressure.—Trans.).

(*Continued on p.* 421.)



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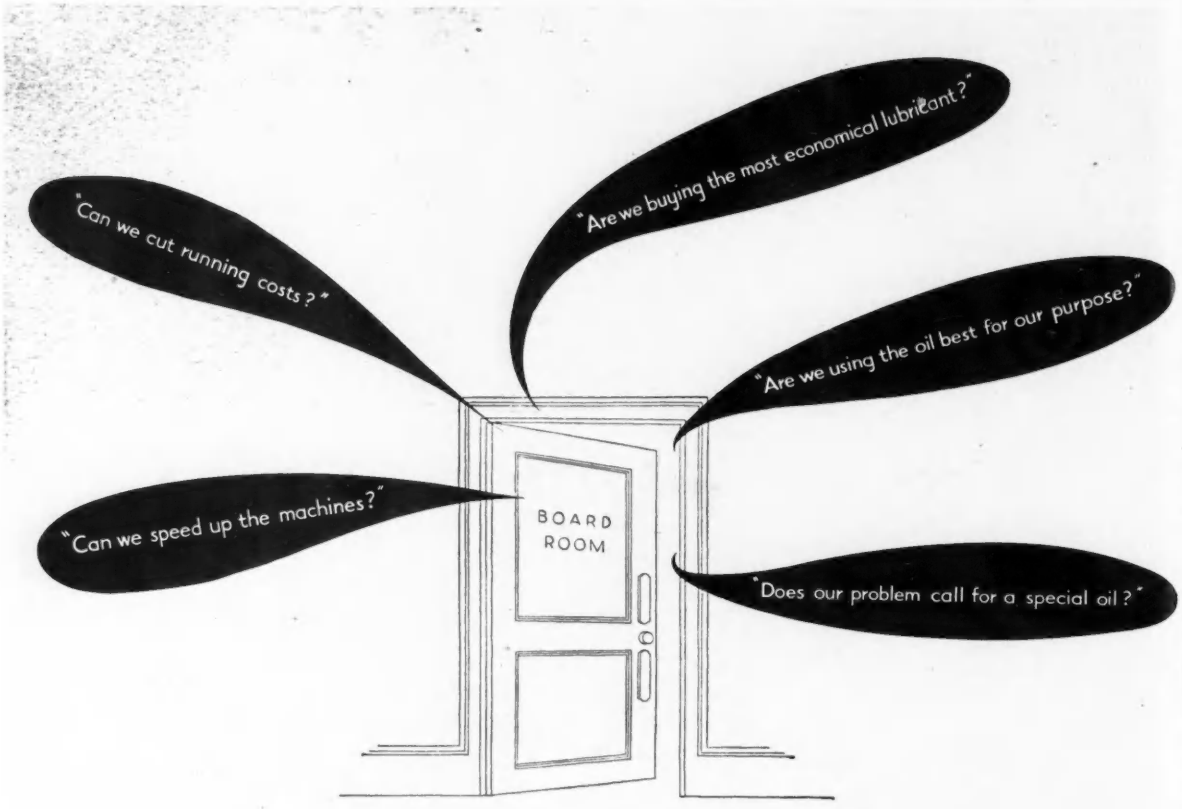
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GAS IN FRANCE—Continued from p. 418

During the last few weeks the coal situation has been profoundly modified. Increased demands by the steel, mechanical, and textile industries have transformed the position to such an extent that if it is not yet a question of scarcity the superabundance of the last months has completely disappeared. Stocks at September 1, 1950, were down to 30 winter days for electricity and 40 for gas. The shortage in winter requirements of domestic coal is estimated at 500,000 tonnes.

The French market reflects the international situation. It will be difficult for the French mines, which are not always delivering the quantities desired, to refute the necessity for importation to meet the demand. That of the electricity supply can be met to some extent by water power, but the margin presumes a reservoir stock of 85% of capacity. In the domestic field stocks, according to merchants, are insufficient and briquette makers are working flat out. In this situation many specialists think that complementary importations of coal should be contemplated, but the Mines point to a reserve stock of 3 mill. tonnes—although it is known that this includes a very considerable proportion of fines—and are resisting the suggestion.

The *Journal Official* of September 12 publishes (according to the *Journal des Usines à Gaz*) a decree relative to the distribution of mineral fuels. This decree directs that the Director of Mines and Steel shall for each three-monthly period allocate supplies to:—

(a) The public services (electricity, gas, etc.) and the steel industry;
(b) Industries covered by certain priorities by reason of their importance to the national economy;
(c) Domestic fuel and small industries consuming less than 20 tonnes per month.

A Consultative Commission is set up comprising representatives of the several industrial concerns to assist the Director in the elaboration of programmes. These industries are obliged to furnish the Director of Mines statistical information relating to their consumption, receipts, and stocks of combustibles.

Steel Grids for Gasworks Purifiers

By H. F. TAYLOR, F.R.I.C.,
Hardman & Holden, Ltd.

THE wooden grids used in the dry purification process have always been a source of weakness, partly because of their limited life and resultant high cost, and partly because they present from 60-75% of 'dead space' to the gas flow, even when new. When partially choked with oxide the dead space is much greater, and it is particularly detrimental when upward flow is in use, as in one section of the split flow type of purifier. Of recent years wooden grids have become both more expensive and more troublesome, because unsuitable timber has had to be used, which is apt to bend or distort in the hot damp atmosphere of the purifier. We have experimented during the last 12 months with steel grids, and these show promise of being less expensive—in view of their longer life—and much more efficient, as they have about twice as much open space as the wooden grids and will present considerably less than half as much resistance to the gas flow.

In our first experiment two grids 4 ft. 2 in. by 2 ft. were used, cut from steel mesh such as is used for screening. This material is made from steel rod by weaving alternately under and over as in weaving cloth. The steel rod was ¼ in. thick, and between the rods there were clear spaces of 1½ in. square in one grid and 2 in. square in the other. Galvanised iron wire gauze, six meshes to the inch, of 24 gauge wire, was laid over the grids to prevent the oxide from falling through. (It is uncertain whether the galvanising is any advantage.)

By the kindness of Mr. E. Sharples and Mr. A. K. Howell, the Manager and Chemist at the Rochdale Road works of the Manchester undertaking, the two grids were placed in a purifier for a test under working conditions, part-spent oxide being spread on them to a depth of about 20 in. The purifier was in operation from June until November, 1949, when the grids were removed and examined.

The six-mesh wire gauze had corroded so much that it broke in places when bent. This had been more or less expected, and is not very important as the gauze costs only about 4d. to 6d. per sq. ft. The steel grids, however, when brushed and scraped down to clean metal showed no signs of pitting and no easily measurable diminution in the thickness of the rods. Nor were they appreciably bent. They were put back again with fresh gauze on, and were in operation until April, 1950, when the box was again opened and the grids examined in situ. The sag in the centre of the grids, with 22 in. of part spent oxide on them, varied from 2½ to 2¾ in. After removal from the box the permanent bend was about 1 in. in each case.

The six-mesh gauze was again very badly corroded, but it was still in position and the oxide had not broken through. The steel mesh was scraped down to clean metal in 10 places, and the thickness measured. One rod was unchanged, four had lost $\frac{1}{32}$ in. and five had lost $\frac{1}{64}$ in. from the original ¼ in. diameter of the new metal.

To make the grids more rigid 1 in. by 1 in. angle iron was fastened all round the grid with the 2 in. spaces, and 1½ in. by 1½ in. angle iron along the two longer sides of the grid with 1½ in. spaces, the grid resting inside the angle and being spot-welded at intervals. The grids then weighed 45 lb. and 57 lb. respectively.

The grids were now tested by supporting them on two bricks at each end so as to give a clear span of 4 ft., and packing 100 bricks on top, mostly in two tightly packed layers. The sag in the centre under this load of 740 lb. was 0.5-0.6 in. with the grid bordered with 1 in. angle iron, and 0.1-0.2 in. in that with 1½ in. angle iron. A new wooden grid of the same size sagged 0.3 in. in the centre when similarly loaded.

The wooden grid had 34% of open space as compared with 69% in the steel grid with 2 in. spaces and 75% in the gauze overlying it. Because of the circular cross-section of the wire and the crimped nature of the weave, there will be only line or point contact between the gauze and the steel mesh, and the contact with the oxide will be much less than it is with the flat surface of a wooden grid. Hence the resistance to the gas flow will be considerably less than is represented by the 25% of dead space calculated from the full diameter of the wire.

As regards cost, the steel mesh of ¼ in. rod with 2 in. square spaces cost 3s. per sq. ft., and wire gauze four meshes per inch of 20 SWG wire or eight mesh 24 SWG, 5½d. per sq. ft., both in quantities of 1,000 sq. ft., when we started our experiments last year. At this rate the grids—4 ft. 2 in. by 2 ft.—would cost 25s. and the gauze 3s. 10d. The angle iron would be additional. There is good reason to believe the steel grids would last several times as long as wooden grids, which we understand cost about 20s. to 25s. each.

In addition, there are the advantages of much less obstruction to the gas flow, no fear of excessive sagging with possible cracking of the surface of the oxide, no obstruction caused by oxide becoming wedged between the bars, and easier removal of the oxide, which will not interlock into the grid.

It is admitted that the grids have as yet hardly been tried out sufficiently to enable a final opinion to be formed as to their durability under all conditions, but the experiments are being continued and it is hoped that these notes may encourage others to experiment and to publish their results.

Since writing this note the results of a test at another gasworks have been received. The condition of two steel-mesh grids after five months in a working purifier was considered so satisfactory that arrangements have been made to equip half a purifier with similar grids.

The writer is indebted to Mr. H. B. Avery for much useful advice and assistance in this work, and to Messrs. Hardman & Holden, Ltd., for permission to publish this note.

GAS MANUFACTURE AND USE*

By DAVID M. THOMPSON, M.Inst.Gas E., F.I.E.S.,
Distributing Engineer, Wirral Group, North Western Gas Board

THE over-riding problem before us is the question of costs; high capital costs for plant and equipment and high labour costs for operating the plant. In contradiction to the foregoing, we must try to keep the price of gas stable, so that its use can be expanded to the benefit of the public. The problem is further complicated by reason of the large amount of re-equipping and reconstruction necessary. Obviously, the only way in which these contradictory facts can be reconciled is by more efficient and fuller use of plant and by making all possible economies in its operation.

There is the high capital cost of plant, particularly of carbonising plant. To reduce the incidence of high cost, we should aim at higher productivity. As our plant is already in continuous operation we cannot improve productivity by the simple expedient of working it for longer hours; but, can we speed up the process so that smaller and cheaper plant will do the same work? Greater equality of the load between summer and winter will produce a better load factor and the development of grid mains and bulk supplies would help to get over the difficulty of repairs to plant.

The process of carbonisation has altered little in principle since the time of Murdoch; can there be some improvement in the process to produce a greater yield of gas, at the calorific value we require, by making greater use of the residual coke and tar?

The other process of gas manufacture which seems to me to absorb high capital expenditure and high labour charges for a very unpleasant task is dry purification. Experiments in liquid purification and other variations of the process are proceeding, and I hope that the question of the removal of organic sulphur compounds will not be forgotten. Any extra cost should surely be offset by lower maintenance costs on the district and more satisfactory operation of flueless appliances.

Storage

Gasholders also are expensive; can we reduce the volume of storage required? I think this can be done in three ways. Firstly, by better forecasting of output; secondly, by making full use of interlinkage mains; and, thirdly, by improving the load factor. A salesman who obtains a 24-hour per day load is helping to reduce capital costs, since theoretically such a load requires no storage. We should try to make more use of storage by placing it at strategic points and thus using the distribution mains to better advantage.

It should be possible to use all gas which is stored, and not just that in the top lifts; for this reason, the use of a fan booster on the station governor inlet is justified in certain circumstances. Booster or compressor supplies can be taken from a holder which is too low to provide sufficient pressure for the normal supply through the station governor.

Coke

The sale of coke has an obvious effect on the price of gas and, therefore, on the sales of gas. With our present carbonising methods, more gas sold means that there is more coke which must be sold. Thus there are obvious opportunities for good men to develop new outlets for coke, and the scope is both technical and commercial.

One promising development is the down-jet furnace, the development of which may mean that some industrial loads, instead of being served by gas, may become coke consumers. It occurs to me that this may quite easily apply in the case of very large industrial loads, and in cases where gas firing is not economic. Such a development would have the advantage of balancing gas and coke demand. Thus the ultimate effect may be to lower the price of gas and make it more competitive in its own particular sphere.

The independent coke boiler appears to have been neglected in this area; I think that it is an excellent coke consuming appliance which will supply all the hot water required and at the same time heat one or more rooms. If it is combined with a gas circulator a good summer gas load is also obtained.

Distribution

There are big opportunities for the right men on the distribution side. In the reorganisation and integration of the industry, distribution has a big part to play both in improved service to consumers and in the linking up of undertakings so as to make better use of manufacturing facilities. I think that the most important aspect of consumer service is to see that whenever a gas tap is turned on there is an adequate supply of gas available. When a consumer says 'the gas is poor,' 99 times out of 100 he is not referring to the calorific value, nor does he mean that the sulphur content is too high; he merely means that he has not enough gas; in other words, the pressure is too low. This means that we must design our distribution system to cope with the peak instant demand. Having done so, the system is then underloaded for, say, 23 hours out of 24. This is a challenge to our sales organisation. Can we obtain off-peak loads and night loads to fill the valleys and thus make the distribution system more productive? Obviously such loads have a particular importance out of proportion to their magnitude. We must also endeavour to reduce the great diversity of pressure which occurs in many distribution systems at the present time.

There are great opportunities in gas distribution engineering and many questions which require an answer. At present we know very little of what happens to our gas once it has left the holder. I think we must make much more use of flow and pressure records to ensure that we are making the best use of distribution systems, and to discover where the supply is becoming inadequate before the position becomes acute. There are many methods open to the distributing engineer to meet his problems—high pressure, intermediate pressure, boosted pressure, holder pressure, low pressure and district storage at either high or low pressure. Each method has its own advantages or disadvantages, and the particular method to be adopted can only be decided in the light of particular circumstances and the economic facts of each individual case. In general, higher pressures are more suitable for greater distances or shorter periods. One fact of which I am certain is that there will be an increasing use of governors of all types in the future. If the use of governors became universal, we could allow greater pressure losses in the distribution system, and thus transmit more gas through existing mains. However, the capital and maintenance costs of service governors usually balance the lower capital costs on mains.

Utilisation

The subject of utilisation is not left to the end because I think it is least important; in fact, the reverse is the case.

Regarding the industrial use of gas there are big opportunities. There is a shortage of suitably trained and qualified personnel for developing industrial sales. The right men should find it an extremely interesting career; such men need to have expert knowledge in the utilisation of gas and they should also have a good knowledge of industrial processes and the application of other fuels. It is important that they should know the industries in their own area and the possibilities for the use of gas both for industrial processes and for auxiliary purposes such as space heating and canteen work.

* Presidential Address to the Manchester District Junior Association of Gas Engineers

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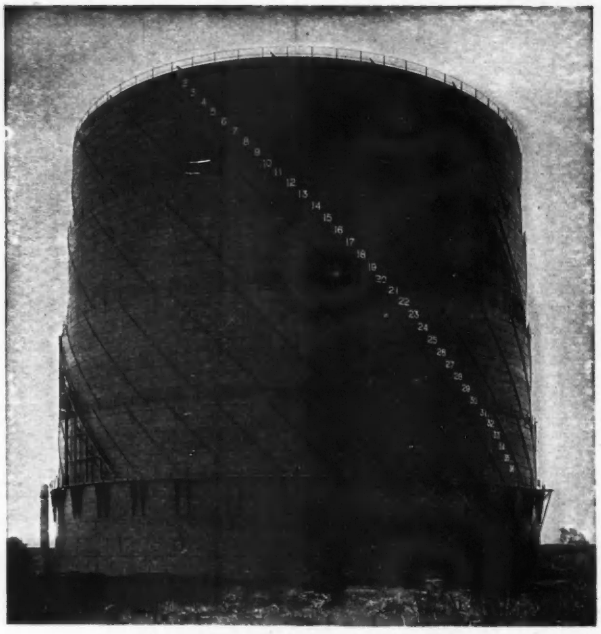

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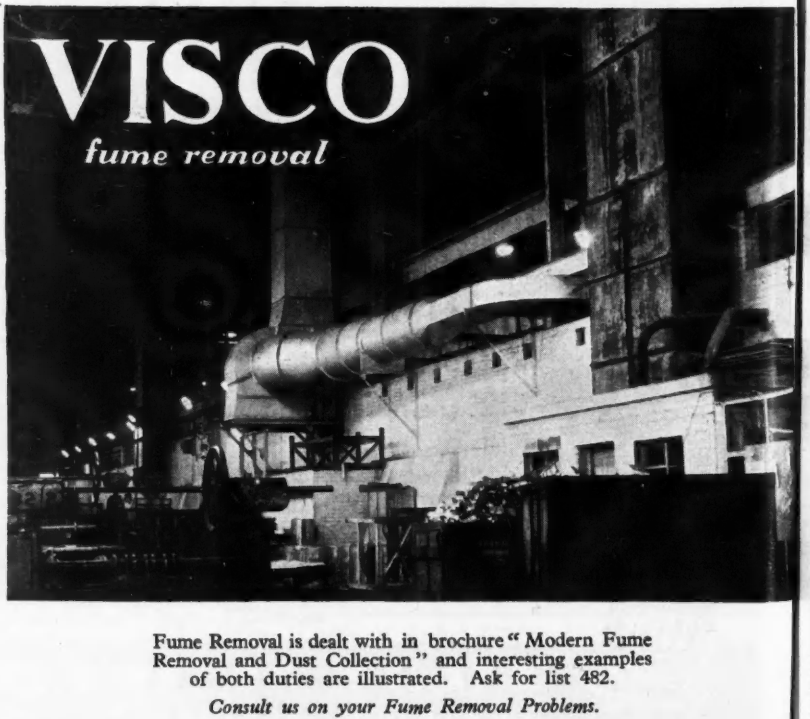

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Practically every industry requires heat in some form and many of the possibilities have not yet been fully explored.

I understand also that more use is likely to be made of heat treated steel, instead of using alloy steels, in order to economise in the use of imported metals required for alloys, and this is an obvious opportunity for gas fired furnaces.

It is also important that our industrial representatives should be on friendly terms with the people connected with industry, so that they come to be regarded as friends and men whose advice can be relied upon. I know of one industrial representative who used to keep a notebook with full particulars of all his industrial clients, their pet ideas, hobbies, etc. By looking up the book before he made a visit, he was able to get on good terms with the client straight away, who was flattered to feel that he had been remembered. I might also add that he was a first-class technical man who knew his job.

An industrial gas engineer should not think too much in terms of very large loads; a large number of medium loads is much more valuable. Any load which forms a considerable proportion of an undertaking's output can be dangerous if it is suddenly discontinued, although interlinkage schemes will lessen the effect.

Perhaps one of our industrial technicians can devise a simple, foolproof, and thoroughly reliable safety device for all automatically controlled industrial appliances which will also be reasonable in cost. There is certainly a need for such a device.

The domestic load is the backbone of our sales but the cooking load is probably reaching saturation since the new replacement cookers are more efficient than those they replace; moreover, the electrical industry is now providing strong competition. Nevertheless I regard the gas cooker as of great importance. If we can get a cooker installed there is a good base load on which to build. We must strive to increase the domestic consumption per consumer so as to reduce the incidence of the high capital charges for servicing present-day houses. Therefore, we must increase the use of gas for water heating and space heating, particularly since, to some extent, these uses also improve the daily load factor on the distribution system. I believe that the refrigeration load has great possibilities. People are now getting refrigerator-minded and it is a great pity that this appliance, particularly the small size, is not in better supply so that we could really develop a practically new load with an excellent load factor.

It is also worth while considering the future effect on the cooking and refrigeration loads of the increasing popularity of pressure cookers and quick frozen foods; the former may tend to reduce the cooking load while the latter will probably increase the demand for suitable refrigerators.

Maintenance is important so far as the domestic load is concerned and we should support those manufacturers who have designed and developed appliances which require less maintenance. Such appliances may be a little more expensive but they will be more satisfactory for the consumer and better for the industry by reducing maintenance costs. In my opinion, it is worth while sacrificing a little efficiency if the appliance will retain its performance and require less maintenance.

GAS AND CREMATION*

By JOHN F. ASKAM

IT is customary for local authorities in these days to include a crematorium in their provisions for the disposal of the dead. When I first entered this section of the furnace business 30 years ago the position was very different. A few larger cities only had facilities for cremation and with one or two exceptions the furnaces were coke fired. The number of cremations carried out in those days were few in comparison with earth burial and there did not appear to be much scope for the gas furnace manufacturer. In 1920 there were 32 cremations at Sheffield, 20 at Bradford, 26 at Leeds, 18 at Darlington, the highest figures in the year being 893 at Golders Green and 228 at Manchester.

There were to my knowledge two different types of gas furnace in use, one manufactured by Toisol Fradet & Co., of Paris, and installed at Leeds (1904), Bradford (1905), and one at West Norwood. In regard to gas consumption, a guarantee was given, starting with a cold furnace, to reduce the body to white grey ash within five hours with the consumption of a maximum of 10,000 cu.ft. of town gas, and within the following 19 consecutive hours to incinerate consecutively 12 more human bodies with an average consumption of gas not exceeding 4,000 cu.ft. per body. This is a pretty safe guarantee, but it is only fair to point out that it was given over 40 years ago. The actual results were much better than this. The above figures did not allow for a coffin.

An alternative to the above was a gas furnace made by Mr. Lockwood about the year 1917, and there were three of these in operation. The burners are of the natural draught bunsen pattern fitted at the front end underneath the door opening.

In regard to coke we have first the Simon furnace. This is a large semi-producer pattern with the grate extending well below the furnace room floor level, necessitating the construction of a cellar. Coke is fed into the grate which holds a considerable quantity of fuel; gas generated in the producer passes upwards into a second chamber where it mixes with hot air from the recuperator; combustion takes place here in the ash chamber and in the cremating chamber above. The hearth of this latter chamber is built of perforated refractory blocks which support the coffin. The waste products pass through side ports, down to the firebrick recuperator at the bottom and through an underground flue to the stack. Cremated remains fall through the hearth into the ash chamber and are raked into a hopper at the front end of the furnace. The ashes are pulverised and placed in an urn or are scattered as desired.

There were several of these furnaces in operation, installed about 1904. The large mass of brickwork took a considerable time to heat through and consequently the coke consumption was very high. To prepare for a cremation in an afternoon, the furnace had to be started up in the early part of the morning. During that period, when there were so few cremations to be dealt with, the cost of fuel was very high and a much more simple design was introduced. This particular type of furnace consumed about 4½ cwt. of coke per cremation taken in a year's (1927) average at Manchester; with coke at 44s. 7d. per ton, 352 cremations cost 10s. 6¼d.

About 1922 or 1923 I was looking around a crematorium and came to the conclusion that there might be a future for gas firing with a carefully designed furnace if only I could persuade one of the larger cremation authorities to give it a trial. However, superintendents were very conservative in those days and coke was pretty cheap. I did eventually obtain an order and our first furnace was planned out. Natural draught burners were the order of the day as most crematoria were without any electric power to run the blower and again there was the probability of undue noise from the machine. I did not consider the down-draught principle very suitable for cremation. The existing furnaces allowed fumes to leak into the furnace room through door joints when the chimney was not pulling very well. These fumes are most unpleasant, and with a slight draught in the right direction will carry the odour into the chapel. The firebrick recuperator was entirely eliminated as it did not seem to serve any useful purpose on short period operations. In selecting a suitable position for the burners we had to bear in mind that cremation was not by any means as popular then as it is to-day, and that there were

* Paper to the Midland Junior Gas Association, November 7, 1950.

a number of critics who insisted that the gas flame must not reach the body. It is difficult to understand the reason behind such a condition as in the first place the word cremation means 'burning' and, in any case, the incinerating chamber is very soon filled with flame from the coffin and the burning wrapping, packing, etc. On the other hand a correct bunsen flame is clean and does not produce any smoke, nor does it deposit carbon. We eventually placed the burners in two rows one along each side of the ash chamber immediately beneath heavy moulded refractory blocks. These blocks formed the working hearth and were made with projecting runners to support the coffin. They were perforated to allow the cremated remains to fall through into the ash chamber. The flame tips projected slightly through these perforations and were not too conspicuous. The inside dimensions of the first furnace were 8 ft. long by 3 ft. wide. These sizes were later found to be on the large side, and so we now make all furnaces 7 ft. 6 in. by 2 ft. 8 in.—large enough for any but an exceptional coffin. The products of combustion rise from the incinerating chamber through apertures in the lower arch to a space immediately above it where there is a second row of bunsen burners which can be lighted to re-consume the waste products together with any smoke produced by incineration.

The updraught furnace does not require a pilot fire in the chimney. The ash chamber in addition to collecting the remains of the incineration acts as a combustion chamber and becomes very hot as the cremation proceeds. Fat descending from the body is consumed before it has an opportunity of soaking into the brickwork. The floor of this chamber slopes towards the centre of the furnace in order to contain any liquid released in dropsy cases.

In the process of cremation first the coffin and wrappings, then the feet, are consumed, finally the most difficult part, the body. In this type of natural draught furnace the time varies from 1½ to 2 hr. and the gas consumption about 2,500-3,000 cu.ft. per cremation taken on the old basis of 37 or 38 cremations per annum (less than one each week). The price of gas was about 3s. per 1,000 cu.ft. and the fuel cost was roughly the same as for coke. A stoker was not required and the furnace could be heated up in about 20 min.

We were very anxious to get a gas furnace installed at Manchester where the number of cremations was greater than at any of the provincial cities and we did eventually replace their coke furnaces with the natural draught pattern. In 1932 the number of cremations here was 626 for the year and consequently the cost of fuel dropped.

These figures were given to me by the Convener in 1932:

	Jan. 2.		Jan. 4.		Jan. 5.	
Case	Time	Gas (cu.ft.)	Time	Gas (cu.ft.)	Time	Gas (cu.ft.)
			80 min.	2,100	60 min.	1,200
1st	105 min.	2,200	55 ,,	1,200	50 ,,	800
2nd	60 ,,	1,300	60 ,,	1,300	50 ,,	800
3rd	60 ,,	1,100			60 ,,	*nil*
4th	50 ,,	800		4,600	35 ,,	500
					60 ,,	1,000
		5.400	average	1,533	70 ,,	1,400
	average	1,350				5,700
					average	815

With reference to the *nil* consumption, with a really hot furance a cremation can be carried out without turning on the gas. As the years advanced a careful study of the whole operation made it obvious that the addition of air under pressure would not only reduce gas consumption figures, but the extra air would dispose of the coffin more efficiently. Our standard design was changed over to operate with burners requiring air at a low presure. The fan and the burners had to run as silently as possible and the air at the jet was adjusted so that it did not exceed 5 in. w.g. The blower was a two-stage unit with motor running at a slow speed and giving an output pressure of 9 in. to 10 in. w.g. This machine was very satisfactory, being reasonably quiet and taking less than 2 h.p. to operate.

In order to consume the coffin as quickly as possible a high velocity flame is desirable; we have, however, to reduce noise and therefore we must keep the air pressure and the velocity down to within reasonable limits, two conditions directly in opposition. The burner must have an ample supply of air to consume not only the gas but the additional carbon in the incinerating chamber. We cannot pass this extra air through the burner or it will either backfire or blow out, depending on the design; we therefore use the independent method of supply. There is an air preheater in the top arch.

When the cremation has been in operation a short time, the coffin sides commence to spread out at the top coming nearer the furnace wall and the burners. The wood becomes incandescent opposite each burner and consequently we have ideal conditions for backfiring. If a burner backfires it is not always noticed by the operator and therefore on this particular burner we connected the gas and air cocks together, thus taking the adjustment of the mixture out of the hands of the operator. The consumption of gas per cremation is about 1,000 cu.ft. and the average times 1¼ to 1½ hr. A furnace of this description does not require much warming up.

Crematoria with a small number of cases to handle were not such a disadvantage as with the natural draught furnace. The ash pit in this design is heated by radiation from the chamber above. This burner was supplied with furnaces about 1935 and viewed from a practical standpoint gave good results.

About this period I was in touch with the Directors of Golders Green crematorium, where coke furnaces were in use. The cost of fuel was quite reasonable and it was a very difficult job trying to persuade them to change over. Eventually I offered to install a gas furnace complete with blowing equipment on the understanding that it would be removed if not considered satisfactory. This offer was accepted, and the Gas Light and Coke Company co-operated by fixing the pipework and meter. As a result of the tests we eventually received instructions to install eight furnaces complete with blowing equipment.

In the burner we are now fitting, which has been in use for about two years, air is supplied to a small chamber where it divides in two sections. One portion passes to the jet and through an annular orifice; here it meets the gas, and the mixture flows to the nozzle where combustion takes place. The balance of the air travels along the central tube and through the centre of the flame. The proportion of air passing through each section is carefully adjusted by the size of the inlets. Each burner will consume up to about 400 cu.ft. of gas per hour, and there are six in each furnace.

We have also noted the great variation in the times required to incinerate apparently similar bodies, judged from the size of the coffin. We have, for instance, gas consumptions which read as follows: 2nd cremation, 1,600 cu.ft.; 3rd cremation. 180 cu.ft.; 4th cremation, 920 cu.ft.; 5th cremation, 190 cu.ft. These figures have been carefully taken and relate to adults. It would appear that the only way to arrive at a representative figure is to take an average over a period. The results taken over one month show that from a total of 118 cremations, 25 were carried out in 50 min., 37 in one hour, and 56 in times varying up to 75 min. The gas consumption worked out at 913 cu.ft./hr. (average).

There are a few points which may be of interest to members called upon to deal with a preliminary enquiry. In the first place, the supply to the crematorium should allow for 2,500 cu.ft./hr. (for each furnace) and the pressure should be not less than 25 tenths. The exhaust stack, which is usually inside an ornamental tower, should be not less than 45 ft. high above ground level. The type of catafalque to be installed is also a matter for early decision. There are generally speaking three alternatives: (a) The standard design in which the coffin is passed through the doors in the wall and on to the bier; (b) a similar design, but the bier is wheeled inside the catafalque and withdrawn after the service. Both arrangements are suitable for those cases where the chapel and furnace room are on the same floor; (c) the drop lift catafalque where the furnace room is sunk about 6 ft. below the level of the chapel. There are also arrangements to be made for housing the gas meter, turbo-blower and motor.

Load Shedding

IN his presidential address to the North Western Fuel Luncheon Club Mr. C. T. S. Arnett said the reason for the present difficulties was, of course, shortage of plant. He projected on to the screen graphs showing the anticipated position of electricity supply in this country to the year 1960. In 1937-38 there had been a 22% margin. There was no additional plant brought into commission in 1939 because of the rearmament programme. By 1941, mainly due to bringing back into commission old plant, the position of plant available was restored to that of 1938. By 1945 considerable ground had been lost. There was, however, steady improvement up to 1949 but the rate of increase in plant capacity was never greater than that of the load, which continued to increase at the rate of 7 to 8% per annum.

In 1949, 703,000 effective kW was put into commission. This year they would add 950,000 kW. Thus there will be an addition of 8.7% of new plant to meet a 7% load increase. But plant available in the winter of 1949 was 10,985,000 kW whereas the demand at peak was 11,326,000 kW; there was therefore a 5% cut. We should be better off this year with an average winter, but a severe winter might bring an 11.5% increase in the peak load.

The Electricity Authority had asked for an annual increment of plant of 1,800,000 kW. At this rate, as the graphs showed, they would be free from load shedding by 1957. Their allowance, however, had been cut to 1,600,000 kW and at this rate no end could be seen to load shedding.

Mr. Arnett described the many interests which had to be considered in the installation of new plant and the many difficulties which had to be overcome. First the general consent of the Ministry of Fuel and Power had to be obtained. A site had to be selected, involving the investigation of water rights, railway communications and sidings. Designs had to be submitted to the Ministry and these had to be discussed with the Defence Authorities—the Air Ministry was interested in the height and location of the chimneys—the Ministry of Town and Country Planning, that of Agriculture and Fisheries, and one or more local authorities. Even the Commissioners of Fine Arts had to be placated. All these authorities raised objections which had to be dealt with by enquiry, a process which might take up to three years or more. Something should surely be done, in the present situation, to shorten this lengthy procedure.

A possible acceleration in the rate of increase in demand must also be considered. In the U.S.A. the quantity of electricity consumed per employee in factories is three times that in this country. If we only increase to double our present rate we should need an additional 650,000 kW of plant increase per annum. That is to say our total annual increment of capacity should be stepped up to 2,450,000 kW or 2.6 times our present actual rate.

What can be done to deal with this situation? Manufacturers would need to extend their plant and with this picture before them they need not fear to do so. There was considerable export of generating plant. Perhaps the dollar-earning effect of these exports had been over-rated in view of the restrictive effect on industrial productivity of shortage of electricity supply. On the other hand they might have to import generating plant—from such countries as Italy—and perhaps there was something to be said for the apparent anomalous policy of exporting plant to retain markets and importing it to serve our own needs. Labour difficulties were gradually being overcome, plant manufacturers could be encouraged to extend and in this way we may gradually overtake the increasing demand for electricity.

[Comment on this abstract appears on p. 397.—Ed. '*G.J.*']

COMPANY MEETING

OXLEY ENGINEERING COMPANY

THE 14th ordinary meeting of the Oxley Engineering Co., Ltd., was held on November 23 at Leeds, Mr. H. Saville, M.INST.GAS.E. (the Chairman) presiding.

The following is an extract from the chairman's circulated statement:—

The balance of trading account is reduced from £131,021 for the previous period to £118,703. The chief reason for this is due to trading difficulties encountered in this period by two of the subsidiary companies, A. & W. H. Bury (Darwen), Ltd., and Chas. Rawson (Leeds), Ltd.

During the past 12 months the sales of the parent company have fallen by approximately 7%, but the value of work in progress has increased by approximately 37% over the corresponding figure last year. We still maintain a very satisfactory order book which will ensure that our works and outside erection staff will be fully employed in the manufacture of electrically welded gas works plant and chemical plant, oil storage tanks, etc. We also still have men working abroad on our welded products. It will be of interest to note that we have recently obtained the official order for the largest welded gasholder that our firm has ever built.

The erection of the new workshop at our No. 2 works premises to which I referred last year, has now been completed, but internally we have been somewhat handicapped owing to difficulties in obtaining materials, particularly cement; however, I am pleased to report that this shop is now in full production. The Bank position of the parent company continues to show improvement.

The net profit of the parent company after providing for taxation amounts to £35,909 against £34,876 last year. I wish to draw your attention that in making provision for taxation based on the results of the year under review there have been included sums of £2,100 in respect of the parent company and £3,965 for the Group, representing tax on the difference between the taxation allowances for capital expenditure and the depreciation charged in the accounts.

In the case of our subsidiary company, Thos. Dryden & Sons, Ltd., the sales here have fallen slightly but the value of the work in progress has increased in a similar manner to that of the parent company. On the engineering side, the year has been a highly satisfactory one and the works have been maintained in a satisfactory condition. Improvements to plant and extensions have been and are being dealt with. The orders in hand are very satisfactory and full employment is well assured for a long time ahead.

The trading results of our subsidiary, A. & W. H. Bury (Darwen), Ltd., have again been very disappointing, particularly in the first half of the year, but we are very hopeful of better results as our weekly tonnage output has increased, also the enamelling department is very busy. We have orders in hand which are keeping us fully employed, and it is pleasing to note that we are now registering many new customers. Your Directors are still giving particular attention to this subsidiary, and certain alterations have been made in the administrative staff, which will be the means of carrying on this company much more efficiently, in fact, this has already proved to be the case.

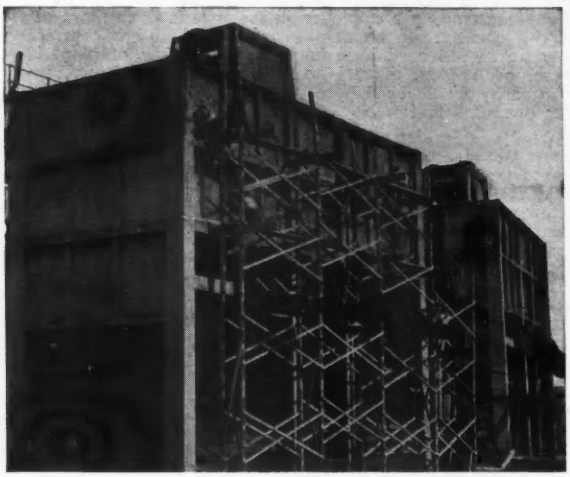
Referring to the subsidiary, Chas. Rawson (Leeds), Ltd., consideration was given to the question of winding it up completely; however, it was ultimately decided not to liquidate.

The net profits of the Group after providing for taxation amount to £39,188 against £47,446, and the amount carried forward of the Group, after transferring £11,400 to general reserve is again increased to £87,500 against £76,262 last year. The profit of the parent company available for dividend is £68,313 compared with £48,904 last year. Your Directors recommend the same dividend as last year, namely, 15%, less tax.

The rearmament programme, together with the nationalisation of the steel industry are very disturbing factors in such businesses as we carry on, and we can only hope that our steel supplies used mostly for essential services, will be maintained.

The report and accounts were adopted.

Gunite



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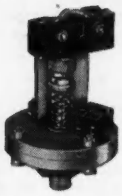

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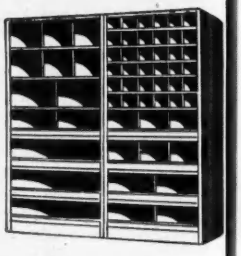

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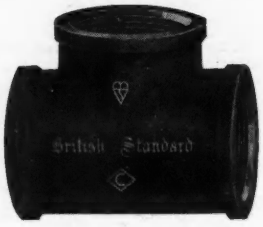

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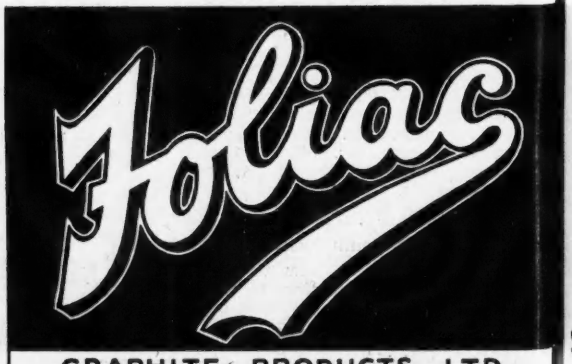

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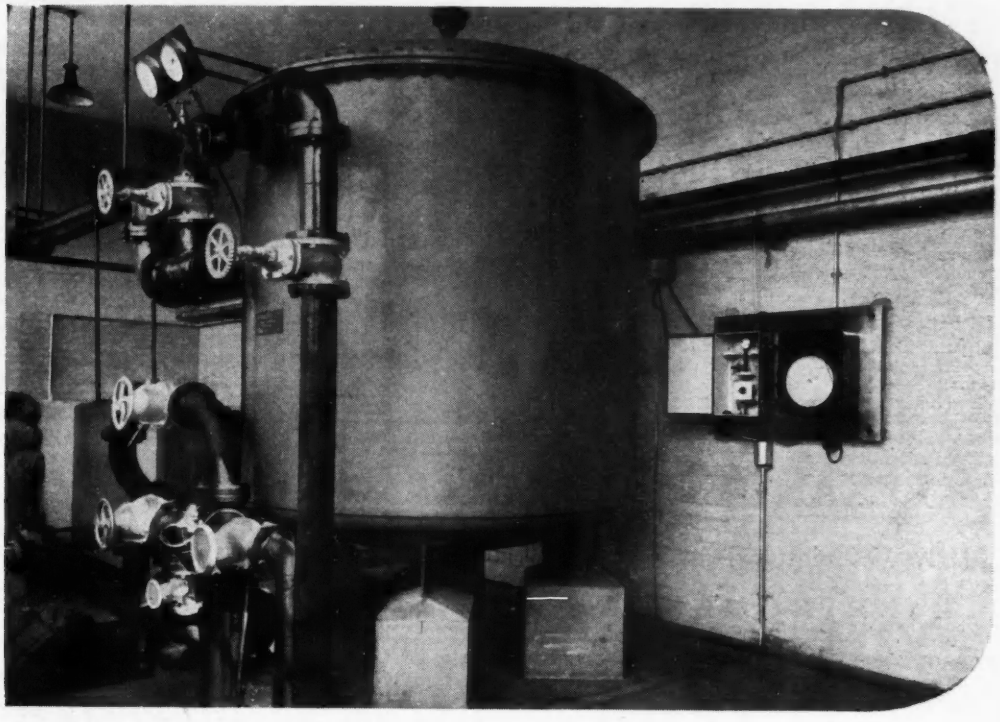
LONDON, S.W.11.

SOFTENING PLANT for Boiler Feed-Water



By courtesy of T. C. Battersby, Esq., Divisional General Manager, Watford Division Eastern Gas Board.

At the St. Albans Gas Works

The illustration shows the 5,000 g.p.h. installation, stabilising lime softened water, at the St. Albans Works of the Eastern Gas Board.

This NEW DEVELOPMENT in modern water softening practice offers greatly improved quality of boiler feed as compared with the conventional lime/soda process alone, since it eliminates the excess lime which is responsible for "after precipitation," and controls alkalinity, thus reducing boiler water densities. The Stabilising process has been developed by FILTRATORS (Pat. Nos. 576014 and 576019) and can be applied either to the modernisation of existing lime softening plant, or can be incorporated in complete new installations using modern accelerated reaction technique.

We shall be glad to analyse samples of raw water or of treated water from existing plant, and to submit proposals for suitable treatment for all gasworks purposes.

FILTRATORS LIMITED

92, SEYMOUR PLACE, LONDON, W.I

TELEPHONE: PADDINGTON 6611 (4 LINES)

SPECIALISTS in ERECTION, DISMANTLING, ETC., GAS PLANT, GASHOLDERS, PURIFIERS, FACTORY BUILDINGS, SHEETING, GLAZING.

W.D. (SHEETERS) LTD.

BARCLAYS BANK CHAMBERS, OWEN STREET, TIPTON, STAFFS.
Telephone: TIPTON 1958.

J. BROWN & CO. LTD.
SAVILE TOWN, DEWSBURY, YORKS.

Supply:–
"BROWNOX-de-LUXE" PURIFYING MATERIAL
Purchase:–
SPENT OXIDE

RETORTS MADE GAS TIGHT
when patched with–

ONX SUPER 83 BRAND **FIRE CEMENT**

A recent testimonial from Gas Dept.
"We are pleased with results obtained after using ONX Super '83' Brand. "Our settings were very bad, with large cracks in retorts, and portions of wall actually collapsed.
"Now, six months after repairing 28 retorts they appear as sound as ever; we anticipate the life of the settings will be prolonged."

"WASK" HIGH TENSILE MALLEABLE PIPE FITTINGS
OVER 4000 SIZES
INDIVIDUALLY AIR TESTED
STANDARD TAPER THREADS
FULL THICKNESS THROUGHOUT
Fit and forget!

MADE BY THE MAKERS OF–
"Wask" Up and Down Patent Lamp Suspenders, the NON-DISCONNECTING raising and lowering gear.

WALTER SLINGSBY & CO., LTD.
NEW DAM WORKS - - - KEIGHLEY
Phone: Keighley 3749 (2 lines). 'Grams: Malleable Keighley

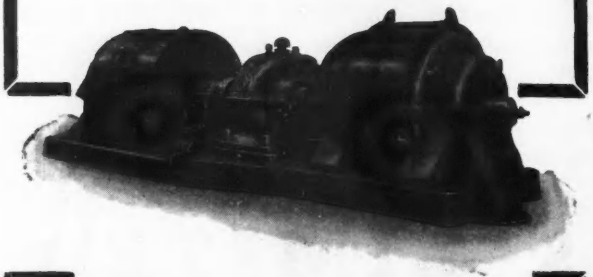
ALEXANDER WRIGHT & CO LTD
1, Westminster Palace Gardens, WESTMINSTER, S.W.1
INSTRUMENTS for Works and Laboratory.

Gauges and Recorders; Main and Dial Thermometers; Orsats; Gas Testing Apparatus; S. G. Bell and Gravitometers; Recording Calorimeters; Boys' Calorimeters; GLCC Hygrometers; Wet Meters.

TURBO-COMPRESSORS & EXHAUSTERS FOR AIR AND GAS.

* * *

We build a complete range of Compressors & Exhausters for air and GAS, suitable for all purposes connected with the GAS industry, including Turbo-Compressors for large capacities, as illustrated below.



WRITE FOR PAMPHLET No. 1018 GIVING PARTICULARS–
REAVELL & CO., LTD.,
RANELAGH WORKS, IPSWICH.
Telegrams: REAVELL, IPSWICH Telephone: 2124 & 5.

***Meter Security* ... RELIABLE & LASTING**

We believe that the "M & M" is the strongest and most secure Meter Lock in existence—but that is not just our opinion—Gas Undertakings all over the British Isles and overseas know that, guarded by an "M & M," the money in their meters is "SAFE."

- **Trouble free and foolproof.**
- **Self locking.**
- **Rust proof.**
- **Reliable workmanship**
- ***IT PAYS TO BUY THE BEST***

H. MITCHELL & CO.
36 & 38, New Charles Street, London, E.C.1.
Phone CLErkenwell 3700

M & M PATENT METER LOCKS

PUBLISHERS' NOTICE

The "Gas Journal" is published every Wednesday, price 1/-; by post 1/2d.

Subscription Rates: Home and Empire :- 45/- per annum; Foreign :- 52/- per annum. (Both payable in advance.) A copy of the "Gas Journal" Calendar & Directory is presented each year to continuous subscribers.

Classified Advertisements: All small classified advertisements are charged at 1/6 per line (approx. 7 words) - minimum charge 7/6. A Box Number address occupies 2 lines, and a further 6d. is charged towards cost of postage on replies. Copy must be received by first post on Monday to ensure insertion in that week's Journal.

Displayed Advertisements: Rates obtainable on application to the Business Manager. Change of copy for displayed spaces must be received 14 days prior to publication if proofs are required. Type area of inside pages 10" deep x 7" wide; block screen 120.

BUSINESS MANAGER: S. T. CULLEN

MIDLANDS OFFICE: 10, Union Street, Birmingham.

NORTHERN MANAGER: W. Q. Foster, 33, St. Helens Road, Harrogate. 'Phone: Harrogate 84291.

WALTER KING, LTD., 11, Bolt Court, Fleet Street, London, E.C.4.

Telephone: CENtral 2236-7. Telegrams: Gasking, Fleet, London.

OXIDE

DUTCH AND DANISH BOG ORE
SPECIALLY ACTIVATED OXIDE OF IRON

Oxide supplied on loan or sale outright.
Highest prices paid for Spent Oxide.

Send your enquiries to

GAS PURIFICATION & CHEMICAL COMPANY LIMITED
ESTABLISHED 1873

PALMERSTON HOUSE, OLD BROAD STREET, LONDON, E.C.2.

Telegrams: "Purification, Stock, London." Telephone: London Wall 5077

The
LIMIT OF EFFICIENCY CAN BE REACHED
by the use of
LUX
GAS PURIFYING MATERIAL

Sole Importers:
HARRISONS (London) LIMITED
66, Mark Lane, LONDON, E.C.3
Telegrams: Birchrock, London Telephone: ROYal 3128

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IMPERISHABLE

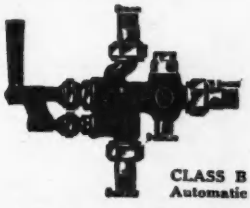
JOINTING PASTE
Non-poisonous, cheaper and better than red lead, ideal for gas, steam or water.

IRON CEMENT
Looks like iron, can be buffed burnished or drilled and automatically caulks itself into any joint.

W. T. HAWKINS & Co.
CHAPEL HILL- - - - - - - - HUDDERSFIELD
Send for Sample Tin POST FREE.

Sole Agents for Australasia
W.T. HAWKINS (Australia) Pty Ltd, Hardware House, Hardware Street, Melbourne, Australia.

BUFFALO INJECTOR
(British Made)



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Automatic

Operated entirely by one handle

GREEN & BOULDING, LTD.
162a, DALSTON LANE, LONDON, E.8

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BRIGHT, SON & CO.
(CLERKENWELL) LTD.
FOR PUBLIC LIGHTING.
CLOCK CONTROLLER REPAIRS.

20 Northburgh St. Clerkenwell, E.C.1. Clerkenwell 7171.
and at
17 & 18, Gt. Sutton St. Clerkenwell, E.C.1. London Wall 0267.

BROADBENT'S SLAG WOOL

THE WORLD'S FINEST
FIRE-PROOF NON-CONDUCTING
material for
GAS PLANT
of every description

J.C. BROADBENT & Co., LTD.
SLAG WOOL WORKS, REDCAR, YORKS. T.N. Redcar 18
54/5, LONDON WALL, LONDON, E.C.2. T.N. City 4813

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SPECIALISED photographic department.

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THE COOKER CLEANER

Tins for Sale to Consumers. In Bulk for Works Use

OXIDE OF IRON.

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Telephone: Mansion House 1156. Telegrams: "Balefire, London."

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PHONE 98 STAINES.

FOR SALE. 'CARRIER' 4 in. CENTRIFUGAL PUMP, 7½ h.p., 400/3/50.

Two hundred H.W. RADIATORS, 'Ideal' and 'Industrial,' also Boilers to suit.

Two TAR STORAGE EGG-ENDED TANKS, 35 ft. by. 5 ft. 6 in. diameter.

Two W.S. CYLINDRICAL OIL STORAGE TANKS, 30 ft. by 9 ft. diameter.

Cochran BOILER, 9 ft. by 4 ft., 850 lb. evaporation, 100 lb. working pressure.

LANCASHIRE BOILERS: 30 ft. by 8 ft. 6 in. and 28 ft. by 8 ft., 140 and 150 lb. working pressure.

Twenty h.p. DIESEL LOCO, 24 in. gauge.

HARRY H. GARDAM & CO., LTD.

CONTRACTS OPEN

WEST MIDLANDS GAS BOARD

DUDLEY DISTRICT

GASHOLDER TANK.

TENDERS are invited for the work of preparing the site and constructing a SUNKEN REINFORCED CONCRETE GASHOLDER TANK, at the Board's Gasholder Station, Dawley Brook, Kingswinford, Staffordshire.

Bill of Quantities and form of Tender can be obtained on written application to the undersigned before Saturday, December 16, 1950, enclosing a deposit of two guineas, which will be returned on receipt of a bona fide tender not subsequently withdrawn.

Sealed tenders must be delivered to the undersigned in the envelope which will be provided, by Saturday, December 30, 1950.

The Board does not bind itself to accept the lowest or any tender.

FRANCIS C. BRIGGS,
Divisional Manager.

No. 2. Division,
West Midlands Gas Board.
Gas Offices,
Kensington House,
Bath Street,
Dudley,
Worcs.

APPOINTMENTS VACANT

WEST MIDLANDS GAS BOARD

BROMSGROVE DISTRICT.

FIRST class FITTERS required. N.J.I.C. conditions and rates of pay. Applications to be addressed to F. J. Edmonds, Engineer and Manager, Bromsgrove District, Worcs.

DRAUGHTSMEN

GAS PLANT.

IMPORTANT Midland Company require a number of first class DESIGN and/or DETAILING DRAUGHTSMEN for all classes of Gas Holders and Gas Plant, etc., positions offer exceptional experience.

Canteen and excellent working conditions available.

Particulars and salary required to Personnel Manager, Horseley Bridge and Thomas Piggott, Ltd., Tipton, Staffs.

WALES GAS BOARD

NEATH UNDERTAKING.

APPLICATIONS are invited for a TECHNICAL ASSISTANT in the above undertaking.

Applicants should have had a sound training in gas engineering and hold a Higher Grade Certificate of the Institution in Gas Engineering (Manufacture). They should have had experience in the operation and control of continuous vertical retorts, water gas plants and ancillary plant.

The salary will be in accordance with Grade VII of the Board's Scale of Salaries (£450 to £530 per annum).

The successful candidate will be required to pass a medical examination and will be subject to the provisions of any superannuation scheme which the Board may introduce.

Applications, stating age, training, qualifications and experience, accompanied by the name of two referees, should be made to the undersigned not later than December 9, 1950.

G. FITTON,
Engineer and Manager.

Gasworks,
Midlands,
Neath.

APPLICATIONS are invited from young men aged approximately 24 to 30 for appointment as PLANT OPERATING ENGINEER in the chemical engineering and gasworks plant department of Newton Chambers & Co., Ltd., Thorncliffe, near Sheffield. The appointment will involve plant supervision in various parts of the country, including starting up and performance testing. Previous experience in the operation of gasworks by-product plant particularly tar distillation plant will be an important advantage. Apply in writing to the Personnel Officer, stating age, qualifications, salary required and when at liberty.

NORTHERN GAS BOARD

DARLINGTON DIVISION.

DARLINGTON UNIT.

RENTALS SUPERINTENDENT.

APPLICATIONS are invited for the appointment of a RENTALS SUPERINTENDENT for the Darlington Unit.

Salary will be in accordance with the N.J.C. Scales for Gas Staffs, Provincial 'A,' Grade 'D,' maximum £500 per annum, placing according to qualifications and experience.

Applicants must have had good experience in all aspects relating to the rentals department of a large gas undertaking, including mechanised billing, prepayment records, accounting records, and control of staff and collectors. The successful candidate will be required to pass a medical examination and to subscribe to such superannuation scheme as may be adopted by the Board.

Applications, endorsed 'Rentals Superintendent,' stating age, experience and qualifications, and giving the names of two referees, should be addressed to Charles Hindle, Esq., Engineer and Manager, Darlington Unit, Northern Gas Board, John Street, Darlington, not later than December 11, 1950.

F. WILSON,
Divisional General Manager.

November 20, 1950.

NORTHERN GAS BOARD

CARLISLE DIVISION.

WORKS CHEMIST.

APPLICATIONS are invited for the appointment of WORKS CHEMIST to the Carlisle Works.

Applicants should have experience in the control of all gasworks plant, and be capable of carrying out all the necessary routine tests required in modern gasworks practice.

The salary will be £450 rising to a maximum of £530 subject to satisfactory service.

The successful candidate will be required to pass a medical examination and to subscribe to such superannuation scheme as the Board may adopt in the future.

Applications, stating age, qualifications and experience, and giving the names of two referees, should be addressed to the undersigned to arrive not later than December 18, 1950.

J. G. AITKEN, M.INST.GAS E.,
Divisional General Manager.

Gasworks,
Rome Street,
Carlisle.

NORTHERN GAS BOARD

SUNDERLAND DIVISION.

APPLICATIONS are invited from suitably qualified persons for the following appointments:

DEPUTY ENGINEER, SUNDERLAND UNIT.

Applicants should have a first class engineering background and possess wide experience in the construction, operation and maintenance of modern gas manufacturing plant.

The possession of the Diploma in Gas Engineering (Manufacture) of the Institution of Gas Engineers, or its equivalent, will be an advantage.

Commencing salary £850 per annum.

CHIEF CHEMIST.

Applicants for this appointment, which carries divisional status, must have secured by examination either a degree in pure science or Associate Membership of the Royal Institute of Chemistry and be gasworks trained.

Salary Grade A.P.T. VIII, scale £490-£570, and conditions in accordance with the Agreement of the National Joint Council for Gas Staffs.

DRAUGHTSMAN.

Applicants should be experienced in the design and layout in gasworks construction, erection of plant and buildings, &c., and preferably trained in the drawing office of a gas plant contractor.

Salary Grade A.P.T. VI, scale £415-£495, and conditions in accordance with the Agreement of the National Joint Council for Gas Staffs.

The successful candidates will be required to pass a medical examination and the appointments will be subject to the provisions of such superannuation scheme as may be adopted by the Board.

Applications, stating age, experience and qualifications, giving names of two referees, should be addressed to the undersigned within 14 days of the issue of this advertisement and suitably endorsed.

W. O. KIRKWOOD,
Divisional General Manager.

Fawcett Street,
Sunderland.
November 25, 1950.

NORTHERN GAS BOARD

SUNDERLAND DIVISION.

COSTING ASSISTANT.

APPLICATIONS are invited from suitably qualified persons for the above appointment at the Divisional office, Sunderland.

Applicants should have detailed experience in the preparation of cost accounts, including the use of mechanised methods and should be capable of controlling costing on a divisional basis.

An appropriate qualification will be deemed an advantage.

Salary Grade A.P.T. VII, scale £450-£530, and conditions in accordance with the National Joint Council for Gas Staffs.

The successful candidate will be required to pass a medical examination and the appointment will be subject to the provisions of such superannuation scheme as may be adopted by the Board.

Applications, stating age, experience and qualifications, giving names of two referees, should be addressed to the Divisional General Manager, Northern Gas Board, Sunderland Division, Fawcett Street, Sunderland, within 14 days of the issue of this advertisement and endorsed 'Costing Assistant.'

SOUTH WESTERN GAS BOARD

APPOINTMENT OF ASSISTANT AREA COMMERCIAL OFFICER.

APPLICATIONS are invited from suitably qualified persons for the above appointment at Area Headquarters, 9a, Quiet Street, Bath.

The salary offered for the post will depend upon the qualifications and experience of the successful candidate and will be within the range £850 to £1,000 per annum.

Candidates must have a sound administrative experience and have received a thorough commercial training, preferably in the gas industry. A knowledge of coal supplies and/or coke marketing will be an advantage.

The successful applicant may be required to pass a medical examination and to subscribe to such scheme of superannuation as the Board may in the future adopt.

Applications, stating age, qualifications and experience, together with details of present and previous appointments and the names and addresses of two persons to whom reference can be made, should be received by the undersigned not later than December 14, 1950.

W. N. CURTIS,
Secretary and Solicitor.

9a, Quiet Street,
Bath.
November 22, 1950.

NORTH WESTERN GAS BOARD

FYLDE GROUP.

ENGINEERING ASSISTANT.

APPLICATIONS are invited for the position of ENGINEERING ASSISTANT in the Fylde Group.

Candidates must be capable of preparing specifications, drawings and estimates for gasworks plant and structures, of supervising drawing office work, and directing and supervising all constructional and erection work.

Candidates should have had experience in the operation and maintenance of gasworks plant.

The successful candidate may be required to pass a medical examination and to subscribe to such scheme of superannuation as the Board may adopt.

The salary will be in accordance with the A.P.T. Scale X (£570-£670) of the National Salary Scales, the initial salary being determined by qualifications and experience.

Applications, giving full particulars, together with the names and addresses of two referees, to reach the undersigned within 14 days of the publications of this advertisement.

J. G. O. DRAKE,
General Manager.

Princess Street,
Blackpool,
Lancs.

SOUTH EASTERN GAS BOARD

JUNIOR TECHNICAL ASSISTANT, CHEMICAL PRODUCTS DEPARTMENT, REGIS HOUSE, KING WILLIAM STREET, LONDON, E.C.

APPLICATIONS are invited for the above mentioned position.

Candidates should preferably have had a technical education and some practical engineering experience.

The selected candidate will, after training, be employed in the capacity of a Technical Representative and Salesman for tar products with special reference to road tar.

The commencing salary will be within the range £280-£450 per annum according to experience.

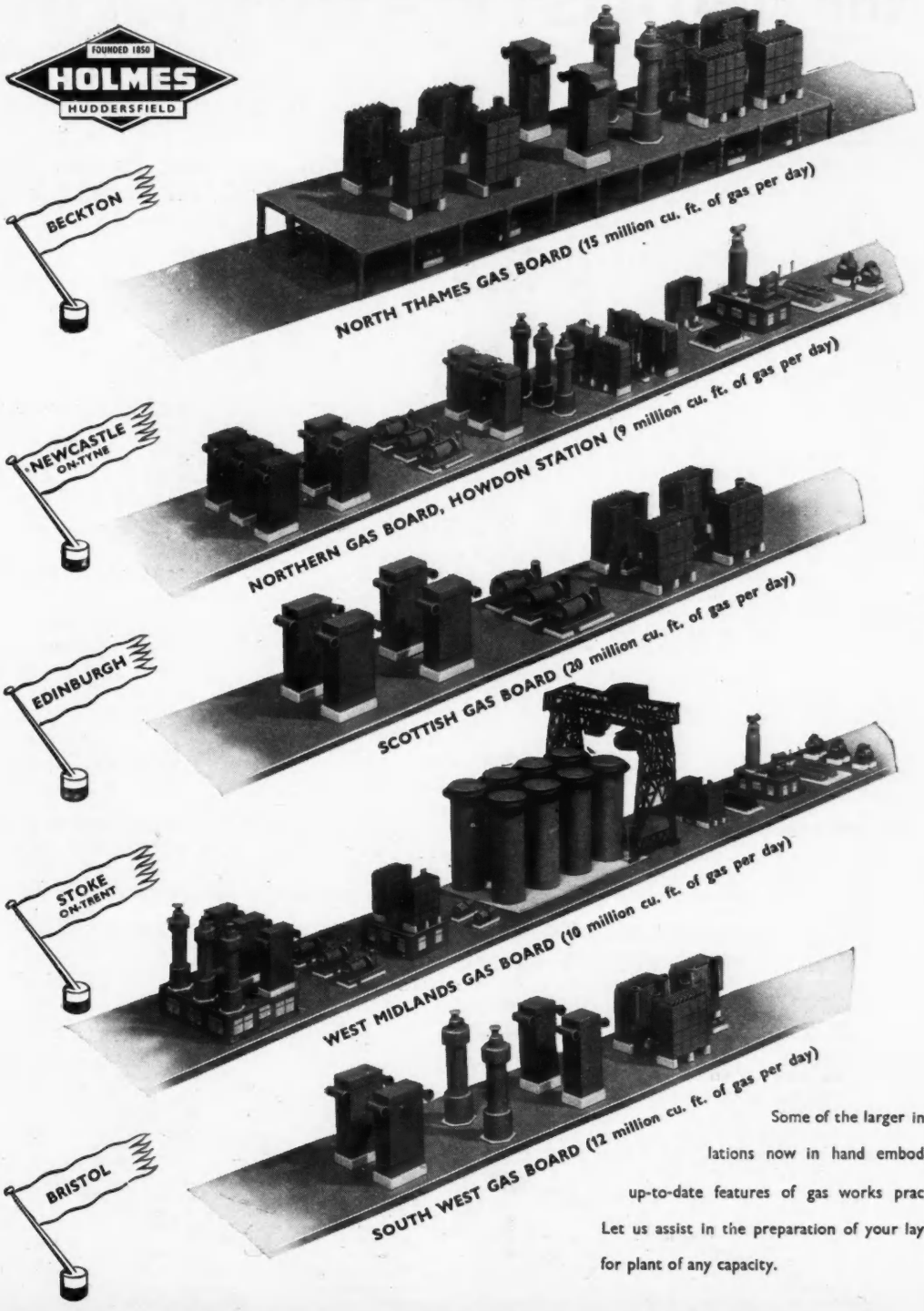
Applications in writing (quoting reference V10/110) giving age, present occupation, experience and qualifications, &c., should reach the undersigned not later than 14 days after publication of this notice.

R. J. MCCRAE,
Personnel Manager.

Katharine Street,
Croydon.

WET AND DRY
PURIFICATION PLANT

FOUNDED 1850 HOLMES HUDDERSFIELD


BECKTON
NORTH THAMES GAS BOARD (15 million cu. ft. of gas per day)
NEWCASTLE ON-TYNE
NORTHERN GAS BOARD, HOWDON STATION (9 million cu. ft. of gas per day)
EDINBURGH
SCOTTISH GAS BOARD (20 million cu. ft. of gas per day)
STOKE ON-TRENT
WEST MIDLANDS GAS BOARD (10 million cu. ft. of gas per day)
BRISTOL
SOUTH WEST GAS BOARD (12 million cu. ft. of gas per day)

Some of the larger installations now in hand embodying up-to-date features of gas works practice. Let us assist in the preparation of your lay-out for plant of any capacity.

W. C. HOLMES & CO. LTD · HUDDERSFIELD · LONDON · BIRMINGHAM

Telephones: Huddersfield 5280 London, Victoria 9971 Birmingham, Midland 6830

162

GAS EQUIPMENT
for INDUSTRIAL HEATING

INJECTORS with wrought iron tube burners for the inside of steel rollers. Injectors with ring burners for heating lead pots, boiling pans, sugar pans, etc. Submerged BURNERS for heating hot water in tanks. Multi-ring Burners, Injectors and NOZZLES for heating type metal pots, coppers, boilers, etc.

BURNERS for glass tube bending and for heating platens. FURNACES for heating small articles to a high temperature. IRONS and STOVES for soldering. BLOWPIPES for brazing, etc.

Send us particulars of your requirements or ask us to send an Engineer-Representative from our nearest office to discuss them with you

"KEITH-BLACKMAN"

KEITH-BLACKMAN LTD., MILL MEAD RD., LONDON, N.17. TN: TOTTENHAM 4522. TA: "KEITHBLAC NORPHONE LONDON."
And at Manchester Birmingham Leeds Newcastle-on-Tyne Glasgow Belfast and Penarth nr. Cardiff.

UNDERPRESSURE ENGINEERING CO., LTD.

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SPLIT COLLARS
SOCKET CLIPS

UNION FOUNDRY, MANSFIELD, NOTTS.
ALL TYPES OF DISTRIBUTION MATERIAL IN STOCK
Service Enquiries:
STAFFORD HOUSE, NORFOLK STREET, STRAND, W.C.2.
'Phone: MANSFIELD 1256. *'Phone:* TEMPLE BAR 9910.
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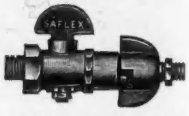
CENTRAL ACTION DRILL STANDS
SERVICE CLEANSERS
TOOLS, ETC.

Telephone: ASTON CROSS 2451
Telegrams: EMPIRE PHONE BIRMINGHAM

OUR IMPROVED PATENT "SAFLEX" PLUG-IN COCK
TO SUIT ALL PORTABLE GAS APPLIANCES
WASH BOILERS &c.

Wm. WHITEHOUSE and Company Ltd.
Manufacturers of Gas Main Cocks, Plug-in Cocks, etc.
Empire Works, Brueton Street . . . . BIRMINGHAM 4



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LEEDS.

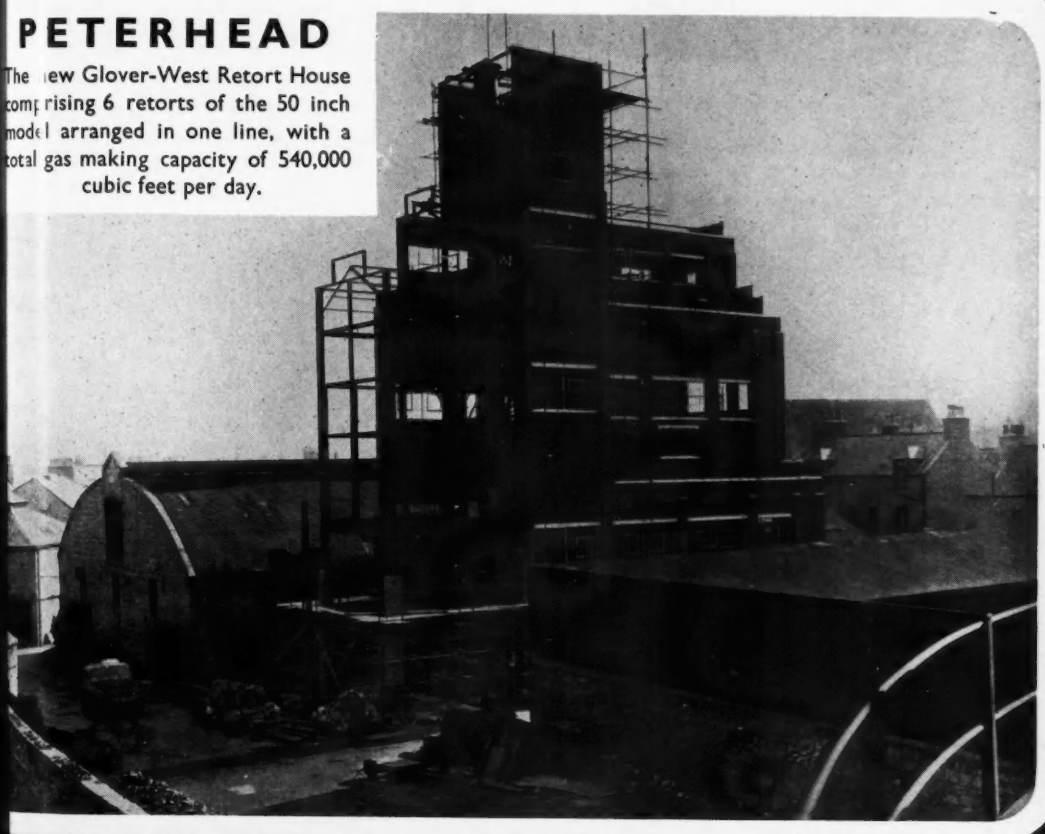
COAL AND COKE SCREENING & SIZING PLANTS.
RETORT SETTINGS
PRODUCERS, FURNACES
REPAIRS.

Printed by STRAKER BROTHERS LTD., E.C.2, for WALTER KING, LIMITED, 11, BOLT COURT, FLEET STREET, LONDON, E.C.4. Wednesday, November 29, 1950.

Work in progress

PETERHEAD

The new Glover-West Retort House comprising 6 retorts of the 50 inch model arranged in one line, with a total gas making capacity of 540,000 cubic feet per day.

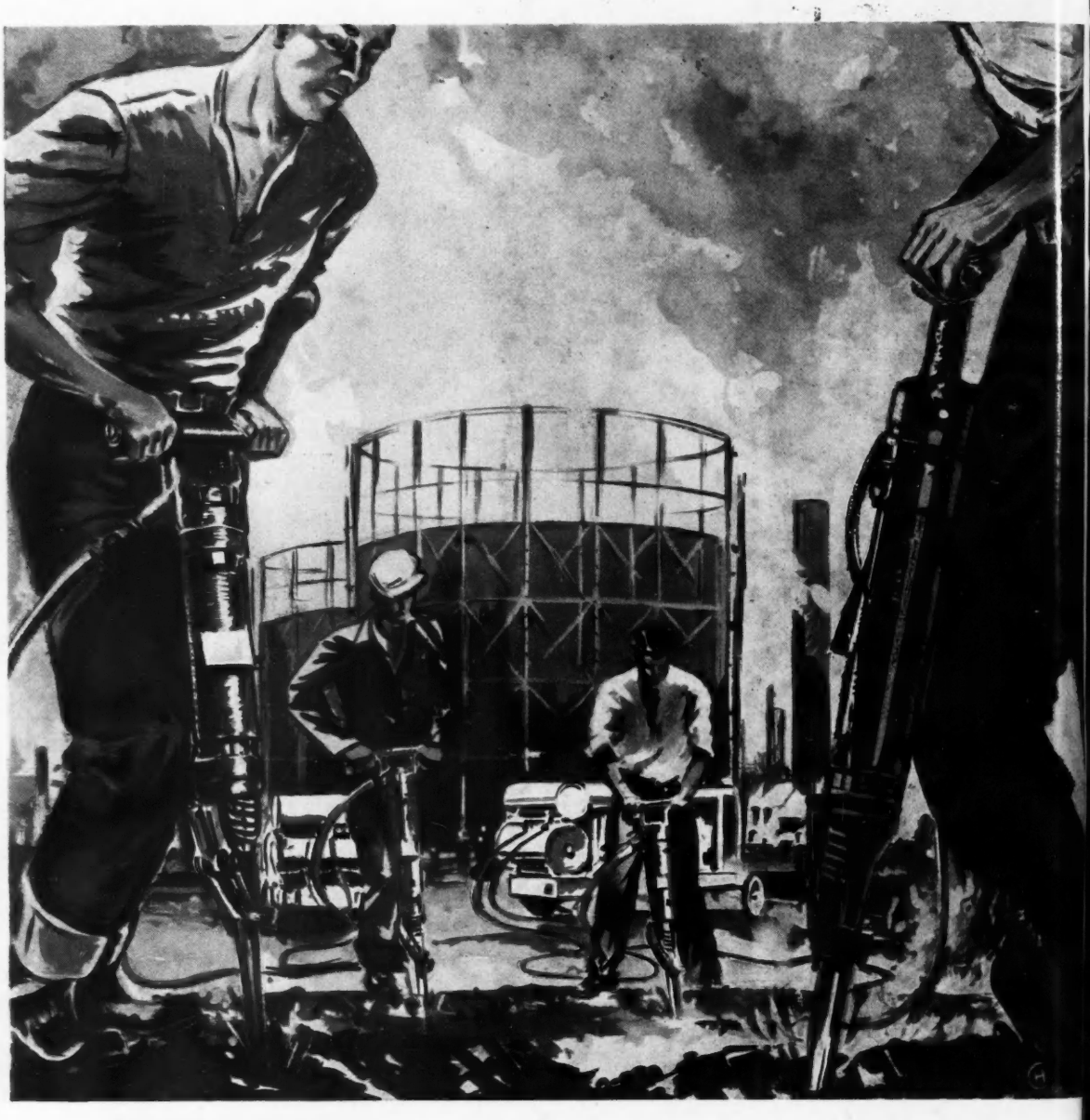


West's Gas IMPROVEMENT CO., LTD.

MILES PLATTING, MANCHESTER, 10

Telephone: COLlyhurst 2961-5. Telegrams: Stoker, Manchester.

London Office: COLUMBIA HOUSE, ALDWYCH, W.C.2. Telephone: HOLborn 4108-9. Telegrams: Wesgasco, Estrand.



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Breaking up hard ground? Then the best equipment is "BROOMWADE." Big contracts such as Gas-Works need powerful tools; that extra power combined with balance, light weight and easy handling is a feature of "BROOMWADE" Breakers. They break more ground in record time. Where Compressed Air is used, there is a "BROOMWADE" tool built to suit the job. Write now for full details.

"BROOMWADE"

Air Compressors & Pneumatic Tools

BROOM & WADE LIMITED · HIGH WYCOMBE · BUCKS · Phone: High Wycombe 1630 (8 lines) · Grams: Broom, High Wyc